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VALUE OF HEALTH EXAMINATIONS IN INDUSTRY

A STUDY OF THE COMPARATIVE SICKNESS RECORDS OF A GROUP OF PERIODIC HEALTH EXAMINEE AND A NONEXAMINED CONTROL GROUP

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In the fields of preventive and industrial medicine and public health many procedures are difficult, if not impossible, to evaluate with scientific precision. It often is a complicated problem to demonstrate that if so-called preventive measures had not been taken the condition supposedly prevented would have happened. These facts would seem to apply particularly to the routine periodic health examination, frequently referred to as the keystone in sickness prevention and health promotion among individuals or industrial workers.

OBJECT OF STUDY

While there has been ample evidence of occasional abnormal conditions, minor physical impairments and incipient diseases brought to light among individuals, thus making possible their prompt control or remedy, there is as yet no unanimity of opinion or proof that such routine health inventories play a large part or are worth the time, effort and cost involved as a factor in the promotion of group health in general or in the reduction of sickness among industrial workers as a company sponsored activity. Periodic health examinations of workers as a part of an industrial health program fail in important respects as means of prevention if, in addition to helping the individual, they do not contribute to the reduction of employee sickness in general or serve to control absence from work and its resulting costs and inefficiency from the standpoint of management.

This study does not attempt to enumerate the incipient conditions, physical impairments and abnormal health habits found in these periodic health examinations. The chief objective is to show what the correlated history of sickness and absence from work may be over an extended period of time in an examined group as compared with a control group of workers who have not had such periodic health examinations.

GROUPS SELECTED

In order to determine whether or not such periodic health examinations are of value in reducing sickness and lost time from work, a study was made of a group of 100 male workers who had had ten or more voluntary annual physical examinations during fourteen consecutive years in a company medical department. This will be referred to as the examined group. For purposes of comparison, a control or nonexamined group, selected at random so far as their sickness records were concerned, was set up. This control group included 100 male employees of comparable age, years of service, economic status and occupational classification who never had taken advantage of such available examinations during this period of time. The average age of each group was 46 years. Thus the only important variable involved in the two groups was that one had had voluntary annual health examinations while the other had not.

EXAMINATION PROCEDURES

The periodic health examinations of the individuals in the examined group were carried on largely by the same physician, who was recognized as a specialist on such examinations. The form used for several years was that prepared and published by the American Medical Association. The only routine laboratory test included in these examinations was an analysis of the urine. Blood, x-ray and other diagnostic tests were made when required. Following these examinations, the usual advice was given as to the correction of poor health habits, abnormal conditions and impairments found. Such individuals were referred to private physicians for further examinations or for treatment, if indicated as necessary.

SICKNESS RECORDS

The sickness records of these periodic health examinees, as well as of the nonexamined control group, were obtained from data accumulated in connection with the employees' attendance records and the administration of the company's sickness benefit plan. All such records of sickness lasting eight days or over were based on physicians' diagnoses and represented more serious cases. In addition to an analysis of these major cases, this study also includes a comparison of minor, incidental sickness absence of less than eight days' duration in the two groups. The results of this study are shown in the tables.

As noted in table 1, there is practically no difference between the examined and the nonexamined control groups as far as the total incidence or number of cases of major sickness lasting eight days or over is concerned. During fourteen consecutive years of available records, considered as a whole, there were 166 such cases in the examined group as compared with 164 in the control group.

Table 2 shows the total number of cases of sickness in each group, classified according to specific causes. The examined group showed a greater number of cases under five of the specific causes, while the nonexamined

group under four classifications showed the greater number of cases. The nonexamined group had a somewhat larger number of scattering miscellaneous diseases. The number of cases under each cause are not sufficiently large or significantly different to warrant specific conclusions.

TABLE 1.—*Sickness Incidence*

Number of cases lasting eight days or over during fourteen consecutive years in examined and nonexamined groups

Group	Number of Cases
Examined group	166
Nonexamined group (control)	164

TABLE 2.—*Causes of Sickness*

Number of cases by causes lasting eight days or over during fourteen consecutive years in examined and nonexamined groups

Causes of Sickness	Number of Cases: Examined Group	Number of Cases: Nonexamined Group
Influenza	44	52
Tonsillitis and pharyngitis	28	14
Diseases of digestive system	16	24
Diseases of respiratory system (nontuberculous)	16	19
Diseases of nervous system	12	6
Diseases of bones and mastoid	9	1
External causes	7	4
Diseases of kidneys	6	2
Minor epidemic diseases	1	6
All other causes (scattering)	27	36
Total	166	164

Table 3 shows the relative number of cases of major sickness by years in the two groups, divided into two seven year periods. During the first seven years the examined group showed a total of 75 cases of sickness lasting eight days or over, while during the last seven years the total number of cases was 91, or an increase of about 21 per cent. On the other hand, in the nonexamined control group there were 59 cases during the first seven years and 105 cases during the last seven years, or an increase of about 78 per cent. It would appear that the periodic health examinations apparently had had a positive effect during the last seven years in definitely controlling the amount of sickness lasting eight days or over in the examined group as compared with the nonexamined group.

It will be noted from table 4 that on the average there were approximately one and one-half more days of lost time on account of major sickness in the nonexamined as compared with the examined group. This seems to suggest that periodic health examinations at least had some favorable effect in reducing severity and complications.

From table 5 it is found that, comparing the last seven years with the first seven years, there was an increase in the total calendar days absent of about 18 per cent in the examined group and about 63 per cent in the nonexamined control group. Here again the periodic health examinations apparently served to influence favorably the actual duration of major sickness of eight days or over after such examinations had been in operation for several years.

As was the finding in reference to major sickness lasting eight days or over noted in table 1, so also according to table 6, there was no significant variation in the total number of cases, taken as a whole, of short term, incidental sickness between the two groups.

It is suggested from the data in table 7, with reference to the incidence of short term illness by years, that the sickness records of the examined group improved very definitely as the years passed, while the records of the nonexamined control group became less favorable. Comparing the last five years with the first five years, the examined group showed an actual decrease of about 11 per cent in the number of cases of short term sickness, while the nonexamined group showed an increase of about 26 per cent. From this it would seem that the periodic health examinations apparently had a favorable influence in promoting a better sickness record in the examined group after sufficient time had elapsed to permit the periodic health examinations to show their possible cumulative effects in reducing incidental sickness.

As indicated in table 8, there was no material difference between the two groups in the average number of days lost from work on account of incidental or minor illness. In the examined group the average days lost was 1.62 and in the nonexamined group 1.63.

Comparing the last five years of record with the first five, table 9 indicates, with reference to minor incidental illness, that there was an actual decrease of about 3 per cent in total working days absent in the examined group, while at the same time there was an increase of about 47 per cent in the nonexamined group. This is additional evidence that through the possible cumulative favorable effects of periodic health examinations not only the number of cases of short term sickness was controlled, but the duration of such illness in terms of days absent was checked.

COMMENT

On first consideration, it would seem that such a small number as 100 individuals in the examined group and a like number in the nonexamined control group have little comparative statistical significance. It should be emphasized, however, that the examined group represents 100 individuals who had ten or more annual physical examinations, or a total of more than one thousand examinations during fourteen consecutive years, and that their sickness records for this rather extended period of time also were available for detailed study.

TABLE 3.—*Major Sickness by Years*

Number of cases of sickness lasting eight days or over during fourteen consecutive years in examined and nonexamined groups, by years

Year	Examined Group	Nonexamined Group
First	10	4
Second	8	6
Third	8	7
Fourth	17	16
Fifth	8	6
Sixth	13	7
Seventh	11	13
Total	75	59
Eighth	4	9
Ninth	6	11
Tenth	11	10
Eleventh	12	19
Twelfth	23	23
Thirteenth	18	20
Fourteenth	17	13
Total	91	105
Grand total	166	164

TABLE 4.—*Duration of Major Sickness*

Average number of days lost per employee on account of sickness lasting eight days or over during fourteen consecutive years in examined and nonexamined groups

Group	Average Days Lost
Examined group	25.95
Nonexamined group	27.46

Such continuous follow-up lends some significance even to these comparatively small groups.

It may be argued by some that comparisons between the two groups are not entirely valid, as the examined group may have been made up of individuals who were particularly and persistently health conscious and careful of their health and who naturally from the outset might be expected to have a superior health record. But this so-called "health conscious" group apparently has no better record with reference to the total incidence and nature of sickness than the nonexamined control group, supposedly not so health conscious. Their sickness records improved only after the periodic health examinations had been taken long enough to show favorable results. It is, of course, impossible to determine what the sickness experience of the examined group might have been if they had not had such periodic health examinations.

TABLE 5.—*Duration of Major Sickness (Calendar Days Absent) by Years in Examined and Nonexamined Groups*

Year	Examined Group	Nonexamined Group
First	279	49
Second	125	184
Third	286	127
Fourth	290	716
Fifth	210	93
Sixth	430	98
Seventh	355	451
Total	1,975	1,718
Eighth	54	180
Ninth	270	329
Tenth	468	235
Eleventh	264	584
Twelfth	485	484
Thirteenth	421	519
Fourteenth	371	458
Total	2,333	2,799
Grand total	4,308	4,517

TABLE 6.—*Incidence of Short Term Illness*

Number of cases of short term illness of less than eight days' duration during ten consecutive years in examined and nonexamined groups

Group	Cases of Sickness (Incidental or Short Term)
Examined group	1,247
Nonexamined group	1,262

Some would hold that those who voluntarily seek periodic health examinations instead of being "health conscious" are chiefly the ones who have reason to believe that they have something the matter with them or who tend to be "neurotic" and are anxious to check up on themselves. Even this supposition is somewhat discounted by the finding that the two groups, as far as the total incidence of sickness is concerned, have had practically the same amount and kind during the years studied, with a definite improvement, however, during the last half of the period in the examined group. Strictly speaking, a periodic health examination is not properly so designated unless it is taken on a routine periodic basis of time, regardless of symptoms, signs or suspicions of disease and when the individual is apparently in good health. Incidentally, it should be noted that in the course of this study no instance was found in which the results of periodic health examinations were used as a means for terminating or adversely affecting employment.

SUMMARY AND CONCLUSIONS

A study covering fourteen consecutive years has been made of the concurrent history of sickness and absence from work in a group of 100 male industrial workers who during this time had ten or more voluntary periodic health examinations in a company medical department. For purposes of comparison, a control group of 100 employees who had had no such periodic health examinations was set up and their records of sickness and absence from work during the same fourteen years also were studied. In all respects with reference to sex, age, years of service, economic status and occupational classification the two groups were statistically comparable, with no important variable other than that one group had had periodic health examinations while the other had not.

TABLE 7.—*Short Term Illness by Years*

Number of cases of short term illness of less than eight days' duration during ten consecutive years in examined and nonexamined groups, arranged by years

Year	Examined Group	Nonexamined Group
First	170	110
Second	152	141
Third	164	121
Fourth	97	116
Fifth	77	69
Total	660	557
Sixth	113	141
Seventh	101	103
Eighth	109	167
Ninth	132	142
Tenth	132	152
Total	587	705
Grand total	1,247	1,262

TABLE 8.—*Duration of Short Term Illness*

Average number of working days lost per employee on account of short term illness of less than eight days during ten consecutive years in examined and nonexamined groups

Group	Average Days Lost (Incidental Sickness)
Examined group	1.62
Nonexamined group	1.63

TABLE 9.—*Duration of Short Term Illness by Years in Examined and Nonexamined Groups*

Year	Total Working Days Absent: Examined Group	Total Working Days Absent: Nonexamined Group
First	259.0	162.0
Second	245.5	212.0
Third	243.5	187.0
Fourth	160.0	188.0
Fifth	113.0	96.0
Total	1,020.0	845.0
Sixth	187.5	227.5
Seventh	172.5	171.5
Eighth	185.0	303.5
Ninth	227.0	270.5
Tenth	217.0	267.0
Total	989.0	1,240.0
Grand total	2,009.0	2,085.0

The findings and suggestions resulting from this study are as follows:

1. No significant differences between the periodically examined group and the nonexamined control group were found as far as (*a*) the total incidence and (*b*) specific causes of illness during a period of fourteen years are concerned. However, in studying the records of sickness (*c*) by years there is positive evidence that the sickness incidence of the examined group as compared with the nonexamined group improved materially

as the years advanced, resulting apparently from the cumulative favorable influence of the periodic examinations.

2. In considering the total number of days absent on account of sickness, it was found in analyzing the data by years that the periodic health examinations also had an apparent influence in checking the duration of both major and minor illness, particularly as the years advanced.

3. As a case finding agency (*a*) to bring to light and control occasional early cases of tuberculosis, diabetes, occupational disorders and other incipient diseases and (*b*) to discover certain major or minor physical impairments or defects of the heart, eyes, tonsils, teeth and other parts of the body, the periodic health examination always has been considered of inestimable value to the individual and to the general public health. To this also may be added, as a result of this study, the value of the voluntary periodic health examination even from the standpoint of industrial management in the possible control of operating and financial losses due to sickness absence among the workers.

4. For individuals, in having voluntary periodic health examinations, and for industrial management, in providing facilities for such examinations in company sponsored health maintenance programs, the most important requirement is that of persistence, since the ultimate values are somewhat hidden and slow in appearing.

46 Riggs Avenue.

THE ATTITUDE OF INDUSTRY TOWARD X-RAY EXAMINATIONS OF THE CHEST

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DETROIT

Collectively, industry has no defined attitude on the use of x-rays as an aid in diagnosing diseases of the thoracic organs in employees and applicants for employment. Certain committees of the National Association of Manufacturers and the United States Chamber of Commerce favor the procedure and are promoting it, but they cannot be said to represent industry's attitude, although they do indicate the trend of industry's thinking.

Generally, the attitude of an individual plant in this matter is determined, or at least is influenced, by the position taken by the management's medical adviser, who might be the doctor in charge of the plant medical department, the neighboring physician who treats the injured employees, the manager's own personal physician or a close medical friend. Except for the differences in cost, the management's attitude on the purchase of x-ray equipment is about the same as it is on blood pressure outfits, electrocardiographs and other diagnostic equipment. Usually the manager looks to the medical department, if he has one, for results in the form of health protection for the employees which cannot readily be valued and, as long as the doctor in charge retains the manager's confidence, decisions of this character are in accordance with his judgment. The attitude of industry can be said to be largely that of physicians in industrial and general practice. Industry is prepared to protect the workers against occupational diseases of a pulmonary nature and those arising out of nonoccupational causes which might be aggravated by the conditions of employment, of which the pneumonoconioses and pulmonary tuberculosis are respectively well known examples. Through industrial hygiene engineering methods industry has endeavored with considerable success to control these. Nevertheless, in the absence of specific immunizing agents, industry recognizes the value of early diagnoses in these important diseases, and experience confirms the effectiveness and practicability of x-rays of the chest as a means toward that end.

In relation to jobs associated with certain forms of dust, there is usually no question as to management's attitude. On the other hand, there may be some question on the use of x-rays for purely diagnostic purposes in the nonoccupational diseases. However, management's interest has been aroused by some spectacular experiences occurring here and there, particularly in regard to pulmonary tuberculosis.

Equipment had been installed in the medical department of a plant employing 10,000 people, and the medical director invited the top management group to inspect it. From a mechanical standpoint they were interested and, observing this, the doctor volunteered a demonstration. An important official stepped forward, and when the quickly processed film was placed on the viewing box it showed an apical lesion. In this case a key man was involved and the disability, though fortunately temporary, came at a difficult time and it was somewhat staggering to the organization. Such experiences are not wholly uncommon, for management is just as susceptible to pulmonary tuberculosis as hourly rated workers and perhaps more so under present conditions. When experiences like this occur they are impressively capable of arousing management's interest.

There is another reason for management's interest, and it is much more common than skeptics admit. For lack of a better expression it can be called the humanitarian interest. It does exist, and instances have occurred in which it has seemed to have received priority. The local tuberculosis society of an Eastern industrial city was ineffectually endeavoring to promote chest surveys in local plants. The manager of the largest was approached with an appeal to lead off with a survey in the hope that others would follow his example. Despite the fact that equipment was on order for an x-ray laboratory in his own plant, this manager granted permission, incidentally at a cost of over $2,000, solely to forward what he considered to be a commendable effort. As a sequel several active cases were found, one of which was in the management group.

An equally good example was in a plant of 7,000, about half of the employees being women. On request of the medical director excellent x-ray equipment had been installed for chest work. Wishing to make its use voluntary, the doctor invited a young woman acquaintance to be the first, expecting that she would spread a favorable word through the plant. As she had considerable local athletic fame the result was unanticipated and startling, for she was found to have a minimal-apical lesion. She accepted the shock sensibly and asked the doctor to call in her sister, likewise employed in the plant. Her sister also had an early lesion. Subsequent investigation by the local health department traced the contact to the father of the girls. These cases attracted a great deal of attention, as both

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of the young women were widely known and popular. Needless to say, volunteers quickly established the x-ray procedure. But that is not the point. In talking about the experience later on, which the manager often did, he expressed great satisfaction in the fact that he had made it possible, by purchase of the equipment, for these employees to have the benefit of an early diagnosis and consequently early treatment, with good prospects for recovery.

Improvements in portable equipment and photofluorographic units have popularized mass case finding surveys. While management usually follows the recommendations of the medical profession with respect to these, instances have occurred in which the advice and cooperation of the plant physician have not been sought. Needless to say, surveys are not wholly effective unless the findings are followed up with good medical procedures. There must be complete accord among the patients, the medical profession, the sanatoriums and the public health authorities, with the plant physician performing the functions of a coordinator.

Surveys serve the purpose of case finding, and to that extent they are useful; but, if size permits, in-the-plant x-ray facilities, with suitable arrangements for roentgenographic consultations, are much more desirable for the permanent control of the respiratory diseases in industry. For this reason further interpretations of industry's attitude will be limited to considerations with regard to the operation of permanent plant x-ray installations.

TABLE 1.—*Conditions Disclosed by 6,505 Chest Films*

Active cases of pulmonary tuberculosis:	
Employees disengaged from employment and referred to their physicians for treatment	15
Cases of questionable activity:	
Employees remained at work under medical supervision	6
Arrested cases:	
Employees also remained at work under medical supervision	14

At this point examples of industry's experience are appropriate. With due consideration to the prevalence of tuberculosis in various geographic areas the following may be regarded as fairly representative:

A plant engaged chiefly in the fabrication of military vehicles and airplane parts, located in the Great Lakes region, has a plant population of about 6,000, one third of whom are women. An analysis of 6,505 chest films gave the results presented in table 1.

All original exposures were on 35 mm. films. Confirmatory 14 by 17 films were taken in 357 cases, of which 74 required follow-up films. In addition to the findings in tuberculosis the conditions listed in table 2 were observed.

A plant located in southern Michigan which manufactures small parts for a great variety of war material has been offering x-rays of the chest as a regular feature of preemployment and health examinations for the past six years. In that period 47,424 chest exposures were made. The average plant population is 16,000. The findings are given in table 3.

In establishing chest diagnostic service, industry desires good relationships with all of the parties who are concerned. These parties are the employees, the medical profession, radiologists, official public health agencies and voluntary health organizations.

THE EMPLOYEES

Diagnostic chest service can be mutually beneficial to management and the employees, but for obvious reasons the employees are primarily the most concerned and the success of the service depends on their willingness to go along with the program. Measures for obtaining their cooperation need not be discussed; it suffices to say that the employees must be convinced of the justice of all medical decisions affecting them and their employment. As a feature of preplacement examinations for selective placement, diagnostic chest service can be obligatory; for health maintenance it may be voluntary. If the chest work is regarded as a regular feature of all examinations, as are other diagnostic aids, it is accepted without question as long as the employees have faith in the integrity of the physician in charge of the plant medical department. With respect to the employees, industry's attitude is characterized by a desire to obtain acceptance of a service which can be and should be mutually beneficial to both management and the employees.

TABLE 2.—*Additional Conditions Disclosed*

Pneumonia	12
Pleurisy	53
Heart enlargement	42
Aortic enlargement	50
Chronic nontuberculous process	37
Congenital abnormality and scoliosis	25
Tumor	8
Arrested tuberculosis	161
Healed miliary tuberculosis	3

THE MEDICAL PROFESSION

Industry does not ordinarily furnish treatment for pulmonary tuberculosis or any other of the conditions that are brought to light by case finding programs unless, of course, they are the results of employment. It is, however, a distinct advantage to the patients if the relationships between their personal physicians and the industrial physicians are those of good mutual understanding. With special reference to pulmonary tuberculosis, these relationships can advantageously be extended to include studies of the places of employment by the attending physicians and on-the-job conferences with the plant doctors. This applies particularly when

TABLE 3.—*Conditions Found Over Six Years in a Plant Employing 16,000*

Pulmonary tuberculosis (active)	86
Pulmonary tuberculosis (healed)	158
Miliary tuberculosis (healed)	27
Calcified lesions—"Wheatena"—Dr. Gardner's classification	131
Pneumonitis	28
Pneumonoconiosis	39
Calcified Ghon tubercle	7
Atelectasis	5
Chronic fibrosis	14
Pleural effusion	8
Pleura (thickened)	18
Pleura (calcified)	3
Unresolved pneumonia	17
Thoracotomy	7
New growth (chest)	11
Pneumothorax (spontaneous)	7
Pneumothorax (treatment)	27
Empyema	6
Heart:	
Mitral lesions	19
Generally enlarged	38
Aorta enlarged	43
Aneurysm	9

the patients are thought to be ready for reemployment to safeguard them on their jobs and to plan health maintenance procedures for them, such as how often and how extensively they should be periodically examined. With respect to the medical profession, industry's attitude is characterized by a desire for good mutual relationships between the plant physicians and the attending physicians. The former are expected to take the initiative in effecting these good relationships.

THE RADIOLOGISTS

In industry the diagnoses of pulmonary tuberculosis and other lesions of the thoracic organs are usually based on interpretations of the films and are necessarily tentative. No such diagnoses are complete until substantiated by clinical observation, which is the function of the patients' own physicians and their consultants. Nevertheless, as considerable dependence is placed on the x-ray films, their interpretations should be supported by x-ray knowledge and experience. Hence the radiologists have an important role in the operation of industrial x-ray laboratories. In this respect their relationships can be made to involve responsibilities as follows:

(1) Responsibility for the x-ray technic and the reading of all films, or

(2) Responsibility for the reading of films only, or

(3) Responsibility limited to the reading of films which are not obviously negative.

The first category is the most desirable, with the consultant giving part time service to the plant, but it is not always the most practical. Usually, as plant medical personnel gain experience the consulting radiologists are content to leave routines to them, reserving for themselves the reading of questionable films, and experience has proved that this arrangement is effectual and workable.

With respect to the radiologists, industry's attitude is influenced by that of the medical directors of the plants, who are permitted to make their own arrangements with the radiologists.

THE PUBLIC HEALTH AUTHORITIES

When industrial diagnostic studies of the chest disclose pulmonary tuberculosis, it is essential that the public health authorities be notified. Usually they follow up contacts and perform the other public health functions essential in such cases. Varying in different localities, these need not be discussed here. It is enough to say that industry's attitude in relation to the public health authorities is characterized by a desire for complete cooperation. Just what form the cooperation should take is not always clearly defined, however, and there is often doubt as to whether the plant physician should notify the department or the family doctor. Usually the plant physician does so if the family doctor does not.

THE VOLUNTARY ORGANIZATIONS

Local tuberculosis and public health societies are frequently quite active and influential. One or more plant managers and other industrial officials may be on their boards of directors, in fact often are, and with such support these organizations are likely to influence the whole local situation, including the attitude of industry. Their principal functions are to promote case findings in tuberculosis, better care of patients and their occupational rehabilitation. In these activities industry generally wishes to cooperate as far as is practical.

In conclusion it can be said that industry has no well defined attitude toward x-ray examinations of the chest, that its position with respect to this matter is influenced by the opinions of physicians who are accustomed to advise with management on medical affairs, and that industry's attitude is therefore in reality the attitude of the medical profession.

In making x-ray chest service available to the employees, industry wishes the relationships which necessarily result from case finding to be professionally ethical, suitable to the best interests of the employees and in conformance with local public health regulations and practices.

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ABSTRACT OF DISCUSSION

COLONEL A. J. LANZA, M. C., A. U. S.: There is no definite attitude on the part of industry toward x-rays and x-ray work, but there is no doubt that x-rays are becoming widely accepted as a necessity in well organized industrial organizations. We see a rather wide demand for x-ray work in industrial plants, and we are receiving a constantly increasing demand for x-ray installations in the plants over which we have jurisdiction. In their industrial application they have two distinct types of use: the first and obvious one is in the preplacement examination; and while it is true that their use was initiated in those types of industries in which a pulmonary hazard is involved, they are now coming into use for preemployment examinations in all types of industry. The second important use is in their public health aspect, in the industrial approach to tuberculosis case finding. Governmental agencies, state agencies, health departments, county medical societies have all initiated x-ray surveys in industry for the purpose of tuberculosis case finding; also we have at least two commercial agencies which are pushing this type of work. I have had no contact with the commercial agency type of survey, but it involves certain features or phases that need to be safeguarded. It is for that reason that, as Dr. Selby mentioned, the Council on Industrial Health felt it was highly important, both in the interest of the individual and in the interest of the medical profession, to make certain that whatever agency does mass surveys of tuberculosis in industrial organizations, it should conform to a certain minimum standard of ethical practice, without which the whole business would degenerate into a purely commercial venture for profit. Our object has been to confine tuberculosis surveys and x-ray work in industry to medical lines, through a medical approach, and to guarantee (as far as that can be done) that the interpretation of x-ray films be limited to those who are capable of interpreting them. Any one who has been through the early days of x-ray work in its industrial aspects has seen all the headaches and confusion which have resulted from the interpretation of x-ray films by those who are not qualified. I hope that this day has now passed and that the cooperation of the Section on Radiology and of the American College of Radiology with our Council will insure that only the highest standard of performance will be found in our industrial work.

Robert Willan.—Skin diseases were the subject of treatises by Daniel Turner (1667-1740), Joseph Pleuck (1732-1807) and Antoine Charles Larry (1726-1783), but the first systematic and scientific classification was that of Robert Willan (1757-1812) of London, whose On Cutaneous Diseases appeared in 1808. "His greatest feat," according to Dr. William Allen Pusey in his History of Dermatology, "was his grouping of a great number of various forms of dermatitis under the generalization eczema."—Clendening, Logan: Source Book of Medical History, New York, Paul B. Hoeber, Inc., 1942.

ENLISTED MEN DISCHARGED FROM THE ARMY BECAUSE OF PSYCHONEUROSES

FOLLOW-UP STUDY

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This follow-up study of enlisted men who were discharged from the Army because of psychoneuroses was undertaken by the Office of the Surgeon General in July 1944 in order to obtain more reliable data than had previously been available concerning the adjustment of these dischargees to civilian life. Information concerning their health as it related to their employment and employability was especially desired.

METHOD

A random selection of men discharged from the Army during the eight month period between May 1, 1943 and Jan. 1, 1944 was made on the basis of serial numbers. All of the men had been out of the service at least six months. Approximately 7,000 names were selected. Basic data used in this study were obtained from the Medical Statistics Division of the Surgeon General's Office and from the Demobilized Records Branch of the Adjutant General's Office. In only 5,937 cases was sufficient information available to warrant inclusion in the study.

A questionnaire to be mailed was drawn up with the assistance of the Morale Services Division. In order to determine whether or not the presence of an individual's name on the questionnaire would in any way influence the validity of his replies, a preliminary sampling of 500 was undertaken. In half of these the individual's name appeared on the questionnaire and in the other half no identification was included. In the latter group, in order to determine whether anonymity was preferred, a note was added stating that it was not necessary to sign one's name.

Assurance was given that replies would remain confidential and that the information would not be transmitted to any other government agency or be used in the veteran's further relations with the Army. It was realized from the start that the replies would represent subjective impressions, perhaps colored by many motives, and that they would not be completely objective. However, it was believed to be important to determine at least what the veterans would say about themselves, recognizing limitations in the reliability of responses obtained in this manner.

From the Neuropsychiatry Consultants Division, Office of the Surgeon General, War Department, Washington, D. C.

Capt. E. A. Lew, Capt. John S. Benz, Mr. Karl Benson and Mrs. Marie D. Wann of the Medical Statistics Division, Office of the Surgeon General, assisted in the collection of basic data and in the tabulation of the results. Lieut. Col. Jonathan D. Hawkins and Miss Melva M. Doyle of the Demobilized Personnel Records Branch, Office of the Adjutant General, assisted in the collection of basic data. Major F. D. Williams, Capt. Daniel F. Connell and Miss Shirley Star of the Research Branch, Information and Education Division, Army Service Forces Headquarters, assisted in the preparation and pretesting of the questionnaire and in the analysis of the data. Major H. E. Johnston, Director of the Office Service Division, Office of the Surgeon General, assisted in the preparation of the report. Miss Tessie Berkman of the American Red Cross assisted in obtaining the personal follow-up reports. Mrs. Jean Fritzsching of the Neuropsychiatry Consultants Division, Office of the Surgeon General, assisted in the preparation of the report. Without the help and advice of these persons and of the American Red Cross, this study would not have been possible.

Replies to this pretesting showed that approximately one half of those who were given the opportunity to remain anonymous chose to identify themselves and that there was no qualitative or quantitative difference in the replies from the main group as compared with the anonymous group.

In all, 5,937 questionnaires with the individual's name on them were mailed to enlisted men discharged from the Army on certificates of disability with the diagnosis of psychoneurosis, and 4,178 (over 70 per cent) replies were received.

Since it was possible that the 30 per cent who did not reply might differ from the others with respect to their health and employment and therefore affect the reliability of the findings, a personal follow-up on a sampling of 200 of this group was undertaken with the assistance of the Home Service of the American Red Cross. Replies obtained in this fashion were essentially the same as those in the large group.

BASIC DATA FROM GROUP STUDIED

Age.—As compared with the age distribution for the entire army, men discharged from the service are an older than average group; 59.9 per cent were 25 years of age or older on entering the military service as compared with a corresponding figure of 46.6 per cent for the entire army.

TABLE 1.—*Age Distribution* of Men Discharged from Army for Psychoneuroses as Compared with Total Army*

Ages (in Years)	NP Discharges, per Cent	Total Army, per Cent
Under 20	7.9	11.5
20-24	32.6	41.9
25-29	25.7	25.5
30-34	20.6	13.5
35 and over	13.2	7.6
Total	100.0	100.0

* For this and subsequent tables the "unknown group" for which data were inadequate was assumed to be distributed in the same proportion as those for which data were obtained.

TABLE 2.—*Marital Status of Men Discharged from Army for Psychoneuroses as Compared with Total Army*

Marital Status	NP Discharges, per Cent	Total Army, per Cent
Single	63.4	59.9
Married	31.2	38.0
Separated	0.5	0.5
Divorced	2.5	1.4
Widowed	2.4	0.2
Total	100.0	100.0

Marital Status.—There was no pronounced difference in the marital status of the follow-up group as compared with the figures for the total army.

Education.—Figures representing educational achievement indicate a lower level for the group studied than the average for the total army. This difference could not be accounted for on the basis of age alone.

Army Grade.—Of those discharged from the service because of psychoneurosis, 70.2 per cent were in the grade of private, as compared with 40.2 per cent, the corresponding figure for the entire army.

Diagnosis.—Almost 75 per cent of the group had been diagnosed anxiety state, conversion hysteria, or mixed type of psychoneurosis. The other types were relatively infrequent.

Incidence of Disciplinary Problems.—Of men included in the psychoneurotic sample 92.4 per cent had no record of trial by court martial; 5.6 per cent had been tried once, and 1.3 per cent twice. Less than 1 per cent had been tried three or more times.

Comment.—As compared with the overall Army averages, the individual discharged because of a psychoneurotic disorder is apt to be older, to have less education and to have made less progress in the Army. There is little to suggest that he has been a disciplinary problem. Anxiety states and hysterical disorders were the most common types of psychoneurosis encountered.

TABLE 3.—*Education of Men Discharged from Army for Psychoneuroses as Compared with Total Army*

Education	NP Discharges, per Cent	Total Army, per Cent
Elementary school, grades 1 to 8	43.4	30.9
High school, 1 to 4 years	45.1	53.2
College, including postgraduate work, 1 year or more	11.5	15.9
Total	100.0	100.0

TABLE 4.—*Grade of Men Discharged from Army for Psychoneuroses, as Compared with Total Army*

Grade	NP Discharges, per Cent	Total Army, per Cent
Private (including aviation cadets)	70.2	40.2
Private, first class	13.9	21.0
Corporal (including T/5)	9.0	18.3
Sergeant (all grades)	6.9	20.5
Total	100.0	100.0

FINDINGS OF FOLLOW-UP

Health.—Health Before Induction: It was found that 48.4 per cent considered themselves to be in good health before induction; 42.8 per cent considered themselves to be in fair health before induction and 8.8 per cent considered themselves to be in poor health before induction.

Present Health: Of those who had considered themselves to be in good health before induction 93 per cent state that their health has deteriorated to fair or poor. Of those who had considered themselves to be in fair health before induction 42.5 per cent state that their health is now poor, while 1.6 per cent now consider themselves to be in good health. Of those who had considered themselves to be in poor health before induction 80.7 per cent still describe their health as poor, while 19.3 per cent report improvement in their health status.

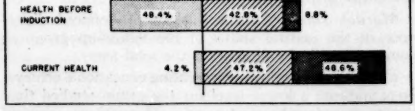

Chart 1.—Health before induction compared with current health.

In reply to the direct question "Is your health the same, better or worse than just before you entered the Army" 72.2 per cent of the entire group reported some deterioration in their health as a result of army service, 25.7 per cent described no change and 2.1 per cent reported that their health at present was better than it had been prior to entering the service.

Chart 2 illustrates that those who considered their health "good" or "fair" at induction reported deterioration in their health more often than those whose pre-army health was described as poor. It shows that men who considered themselves to be in poor health before Army service felt that they had to a much greater extent maintained their health status (52.2 per cent) or improved (6.6 per cent) than those in the "good" and "fair" groups.

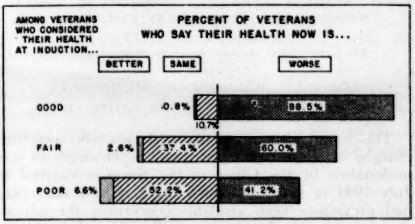

Chart 2.—Health before induction compared with current health.

HEALTH STATUS SINCE DISCHARGE FROM THE ARMY

It was found that 62.3 per cent considered their health to be the same now as their health was at discharge from the Army, 16.5 per cent believe their health has improved and 21.2 per cent believe their present health to be worse than it was at discharge. The greatest change in health status, therefore, seemed to have occurred during Army service rather than following discharge.

It was observed that there was a much greater tendency for the dischargees to look on their illnesses

TABLE 5.—*Diagnosis of Men Discharged from Army for Psychoneuroses* *

Diagnosis	Per Cent
Psychoneurosis, mixed	26.6
Psychoneurosis, anxiety states	24.6
Psychoneurosis, conversion hysteria	20.8
Psychoneurosis, hypochrondriasis	7.0
Neurasthenia	6.1
Psychoneurosis, anxiety hysteria	2.9
Psychoneurosis, reactive depression	1.2
Psychoneurosis, neurosis (somatic)	1.0
Psychoneurosis, obsessive-compulsive states	0.6
Neurocirculatory asthenia	0.5
Psychoneurosis, unclassified	8.7
Total	100.0

* Not uncommonly a mild organic defect was associated with the psychoneurotic disorder and was listed as an additional cause for discharge.

TABLE 6.—*Frequency of Courts Martial Among Men Discharged from Army for Psychoneurosis*

Recorded Courts Martial	Per Cent
None	92.4
One	5.6
Two	1.3
Three or more	0.7
Total	100.0

as physical disorders than as nervous or psychologic disorders.

There was a tendency in those who considered their current health better than it was before induction to believe that their health had improved since discharge. Those who considered their current health the same as it was before induction generally believed their health to have remained unchanged since discharge. It was only in the group who reported their current health as worse than it was at induction that this trend is not apparent. Almost one fourth of these men believe themselves to be worse than they were at discharge. The meaning of this beyond the suggestion of a kind of stability in thinking of one's health in retrospect is not clear.

LENGTH OF SERVICE IN RELATION TO SUBJECTIVE EVALUATION OF HEALTH

In general, the longer a man had been in the service prior to his discharge, the greater was the tendency to report deterioration in health.

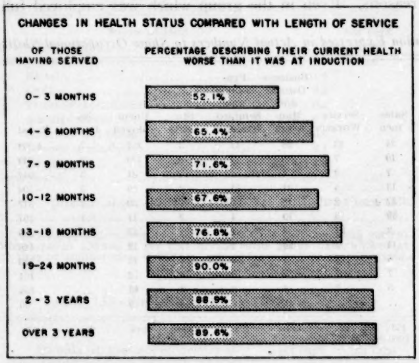

Chart 3.—Changes in status of health compared with length of service.

PLACE OF SERVICE IN RELATION TO SUBJECTIVE EVALUATION OF CURRENT HEALTH

Since length of service of the discharged psychoneurotic individual seems to have a direct relationship to his evaluation of his health status, the relationship between current health and place of service was examined. Proportionately more men who served overseas considered their health poor in comparison with those men who had only domestic service.

Of the total group, 13.7 per cent had overseas service. Of these, 91.9 per cent feel that their current health is worse than it was at induction, whereas only 69.1 per cent of the "domestic service only" men describe their current health as being worse than their health before induction. Only 7.6 per cent of the men who had seen overseas duty believe their health to have remained unchanged, as contrasted with 28.7 per cent of those whose service was domestic. This is illustrated graphically in chart 4.

However, in comparing the men's evaluation of their present health there is not as much difference between the overseas group and those whose service was confined to the continental limits of the United States. One possible explanation for this is that the men who were sent overseas were probably a healthier group.

MEDICAL CARE AND HOSPITALIZATION

Of the entire group 15.3 per cent had been seeing doctors "fairly often" prior to entering the service, 37.9 per cent "seldom" and 46.8 per cent "not at all."

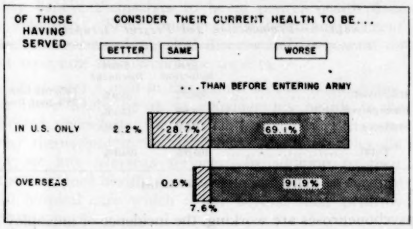

Chart 4.—Relationship of place of service to evaluation of current health and preinduction health.

Since discharge from the Army, 75 per cent of the entire group have consulted a physician one or more times, generally (83 per cent) for the same medical conditions for which they were discharged. In the other instances, physicians were consulted for routine physical examinations, accidents, surgery and complaints unrelated to their previous trouble.

TABLE 7.—*Time Between Discharge from Army and First Hospitalization*

Length of Time Between Discharge and Hospitalization	Frequency
Less than one month	70
One month	83
Two months	75
Three months	65
Four months	70
Five months	53
Six months	59
Seven months	41
Eight months	37
Nine months or more	58
Total	611

Median 3.2 months

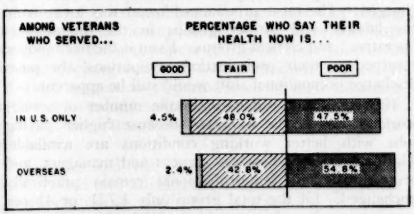

Chart 5.—Place of service in relation to evaluation of current health.

The figures for hospitalization since discharge in part confirm the apparently increased need for medical care. Six hundred and eleven, or 14.6 per cent of the entire group, were hospitalized at least once after leaving the Army. The vast majority (70 per cent) of these were hospitalized only once; 4.7 per cent had four to nine admissions. In some instances, however,

hospitalization merely involved remaining over night for tests.

The length of time elapsing between discharge from the Army and first hospitalization is indicated in table 7.

EMPLOYMENT

Employment at Present as Compared with Employment Before Induction.—While most of the men who have been discharged from the service because of psychoneuroses are working, the incidence of unemployment has increased appreciably. This is particularly significant in view of the current manpower shortage.

TABLE 8.—*Preinduction and Present Occupations*

	Preinduction	Since Discharge	
Employed	93.7%	85.9%	{ 72% full time { 28% part time
Unemployed	3.8%	13.1%	
Students	2.5%	1.0%*	
Total	100.0%	100.0%	

* Before the G. I. bill of rights was enacted.

ing the service. The majority of those who were unemployed prior to service are now working. The composition of the present employed and unemployed groups as compared with their preinduction status is presented in table 11.

REASONS FOR REPORTED CURRENT UNEMPLOYMENT

The veterans reporting current unemployment gave a variety of reasons for their failure to work. The majority (71 per cent) gave poor health as the reason and this was usually described as physical. The psychogenic nature of their disorders was apparently not recognized. In 29 per cent unemployment was attributed to factors other than health, such as "shop closed down temporarily" or "no work in my line."

HEALTH AS A FACTOR IN NOT WORKING FULL TIME

A majority of those who were not working attributed their unemployment to poor health, and a considerable percentage of those who were working part time attributed the limitation of their employment to health reasons. Even in the group which was employed full time, however, an appreciable number (18 per cent) reported the need to take some time off from work because of impaired health.

TABLE 9.—*Preinduction Occupation Compared with Present Occupation Expressed in Actual Numbers to Show Occupational Shifts*

Preinduction Occupation	Operatives	Laborers	Farmers and Farm Laborers	Craftsmen	Clerical	Salesmen	Service Workers	Business Owners and Managers	Professional and Semiprofessional	Students	Unemployed	No Data	Total
Operatives	**704**	92	56	131	80	24	13	28	17	3	137	7	1,292
Laborers	204	**152**	48	53	28	10	7	5	4	6	123	9	649
Farmers and farm laborers	120	33	**208**	42	12	7	2	1	3	..	81	3	512
Craftsmen	142	16	17	**193**	23	13	5	21	11	2	58	3	504
Clinical	55	9	2	13	**165**	17	2	14	5	3	30	2	317
Salesmen	33	8	3	8	22	**59**	3	10	4	2	11	1	161
Service workers	48	13	3	4	8	2	**57**	3	1	..	17	..	156
Business owners and managers	25	2	2	14	16	14	3	**56**	4	..	12	..	148
Professional and semiprof.	16	5	1	10	8	5	2	3	**56**	1	13	..	120
Students	22	8	4	2	15	7	1	5	9	**19**	12	..	104
Unemployed	44	13	5	12	21	5	2	3	6	2	**43**	..	156
No data	17	9	3	5	5	..	..	1	2	5	9	..	56
Total	1,430	360	352	487	453	163	97	150	122	43	546	25	4,178

Total remaining within same occupational category: 1,721 or 41%.

PREINDUCTION OCCUPATION COMPARED WITH PRESENT OCCUPATION

Arbitrary categories of employment were set up in order to study the occupational stability of the men discharged. The most pronounced trend was away from the laborer and farmer groups in the direction of operative [1] and clerical groups. Even if the unemployed returned to their preinduction occupations, the postdischarge occupational shift would still be apparent.

The significant reduction in the number of service workers was to be expected because higher paying jobs with better working conditions are available. The categories of business owners and managers, and professional and semiprofessional remain practically unchanged. Of the total group only 1,721, or 41 per cent, returned to the same kind of job after separation from the Army (tables 9 and 10).

THE UNEMPLOYED

The present group of unemployed is made up for the most part of those who were employed prior to enter-

1. This category as defined by Selective Service and the War Department includes workers, usually in industrial plants, who can be hired and taught their tasks in a relatively short time. Their tasks usually are the operation of various types of automatic machines.

TABLE 10.—*Preinduction Occupation Compared with Present Occupation Expressed in Percentages to Show Occupational Changes*

	Preinduction Occupation	Present Occupation
Operatives	31.4	34.6
Laborers	15.7	8.7
Farmers and farm laborers	12.4	8.5
Craftsmen	12.2	11.7
Clerical	7.7	9.7
Salesmen	4.0	3.9
Service workers	3.8	2.3
Business owners and managers	3.6	3.6
Professional and semiprofessional	2.9	2.9
Students	2.5	1.0
Unemployed	3.8	13.1
Total	100.0	100.0

SOURCE OF HELP IN FINDING EMPLOYMENT

Thirty-three per cent of the men returned to their old jobs, 41.6 per cent found new jobs without help and 6.1 per cent were helped by friends and relatives,

9.9 per cent reported assistance from federal agencies, and 1.8 per cent received assistance from sources such as voluntary community groups, unions and fraternal organizations.

ATTITUDE OF PROSPECTIVE EMPLOYERS AS REPORTED BY VETERANS

Of those veterans currently employed, 73.5 per cent experienced no difficulty in getting jobs despite the fact that they had received medical discharges. In this same employed group 22.7 per cent felt that prospective employers showed some hesitancy in considering them for jobs. The largest single reason given was failure

TABLE 11.—*Present Status*

Status before induction	Employed *	Unemployed
Employed *.....	84%	12%
Unemployed.....	3%	1%

* Includes those attending school.

TABLE 12.—*Source of Help in Finding Employment*

Source of Help		Per Cent
Returned to old job.....		33.0
Secured new job.....		60.0
No help.....	41.6	
USES.....	8.6	
Veterans Administration.....	0.6	
Selective Service.....	0.7	
American Red Cross.....	0.6	
Friends or relatives.....	6.1	
All other.....	1.8	
Unemployed.....		7.0*
Total.....		100.0

* This figure differs from the figure of 13.1 per cent reporting current unemployment. While 93 per cent of the entire group have worked at one time or another since discharge, only 85.5 per cent are now working.

TABLE 13.—*Attitudes of Prospective Employers*

Attitude of Prospective Employers	Employed per Cent		Unemployed per Cent	
Employers showed no reluctance to hire.....	73.5		59.7	
Employers reluctant to hire.....	22.7		32.5	
Failed to pass physical examination.....	12.4		16.2	
Poor physical risk for industrial insurance	2.7		4.6	
Too "nervous"	2.3		4.4	
Uninterested because of medical discharge..	2.9		3.6	
Limitations of work a factor.....	0.5		0.7	
No details	1.9		3.0	
No data		3.8		7.8
Total.....		100.0		100.0

to pass the physical examination, which some veterans thought was made particularly rigid in order to exclude them. Other reasons for which they were refused employment included "poor physical risk for industrial insurance," "too nervous," "disinterest (on part of employer) because of medical discharge" and "limitations of working capacity."

Of those veterans currently unemployed, 59.7 per cent believed that prospective employers showed no reluctance to hire them because of their medical discharges, while 32.5 per cent did feel that prospective employers showed some hesitancy in considering them for jobs because of their medical discharges. This is a larger percentage than appears in the employed group. In 16.2 per cent failure to pass the physical examination was the reason given for not being hired.

COMMENT

The results of the follow-up study indicate that men discharged from the Army because of psychoneurosis differ significantly from the Army average with regard to age, education and Army grade.

In general, those discharged from the Army with a diagnosis of psychoneurosis consider their health to have been adversely affected by their Army service. They believe themselves to be in poorer health than at induction. They consider their health impairment chiefly in terms of physical disease and in general do not recognize the psychologic aspects.

The longer a man in this group served in the Army, the more likely he is to consider his health to be affected. Similarly, the men who served overseas consider themselves to be sicker than do those who did not see any overseas service. In addition to their reporting poor health, a need was expressed for medical and hospital care which is far beyond their prearmy requirements.

The vast majority of those studied are working but definite changes in their employability are apparent. More men are unemployed now than at the time of induction. The unemployed group is for the most part composed of those who were working before induction. In their subjective estimate of their reasons for not working now, the unemployed, to a great extent, attribute their failure to work to poor health. There was little indication that they were discriminated against by prospective employers because they received a medical discharge.

Overseas service was reported by 13.7 per cent of the group. This percentage may increase as time goes on. It is not possible, however, to predict at this time the effect such an increase would have on the findings of future similar studies. A special investigation of the overseas group will be undertaken in an attempt to determine whether or not they comprise a special group in terms of adjustment.

The limitations of the method used in obtaining the data are obvious. The replies received by mail from the men are purely suggestive. The results may not be a reflection of the true state of their health. Exaggerations may have been made consciously or unconsciously for a variety of reasons. However, the veterans' own evaluation of their conditions is important and cannot be ignored. The findings indicate that there was little tendency for them to report change in their conditions between discharge and the follow-up study. There is a distinct suggestion of permanence of their disorders in their own minds. Active measures will have to be taken if this attitude or state of affairs is to be influenced.

It is recognized that employment is easy to secure at this time and that adjustment in terms of employment is relatively simple now. It is not possible to predict what will happen in the future. Factors will be present which may influence adjustment in opposite directions. The end of the war may produce in some a change in intrapsychic tension and need for illness. Time alone may bring with it improvement. Increased competition for fewer jobs will exert its influence, and the socioeconomic condition of the postwar world will be an important factor affecting the adjustment of these men.

PSYCHIATRIC TECHNICS IN THE MANAGEMENT OF EMPLOYEE PROBLEMS

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Treatment of the many minor personality problems and maladjustments coming to the attention of the physician in industrial practice does not demand new or complicated technics so much as it does a more effective application of methods already at his disposal for influencing human beings and their relationships on the job. Psychotherapy is of course an integral part of all medical practice, but its special potentialities in the field of industrial relations have not received the emphasis they deserve. Not only the great number of dispensary calls which involve psychogenic disturbances either primarily or secondarily but also many of the other personality problems which harass industry could be more effectively handled if the role of the industrial physician included active and clearly defined psychotherapeutic functions. In dealing with pathologic aspects of industrial human relations the physician is constantly confronted with the need for brief psychotherapeutic technics which are both effective and practical.

Unfortunately much of the clinical psychiatry taught in medical schools is of little direct use in the industrial setting. Few of the technics learned from observing the end results of severe chronic mental disease, as found in hospitalized or committed patients, are applicable to everyday industrial practice. The interminably detailed case history records, and the involved terminology which has become traditional in mental institutions, have both contributed to the general belief that all psychiatric technics are too cumbersome and time consuming to be of practical use in industry. Along with this there is another common belief, often amounting to fear, that any attempt to streamline psychiatric methods would render them superficial and therefore useless or even dangerous when applied by general physicians to the minor nervous and emotional reactions encountered in ordinary practice. It is my purpose in this paper to present evidence which would tend to disprove such pessimistic assumptions concerning the place of psychiatric technics in industry and to uphold instead the usefulness and validity of certain types of brief psychotherapy which can be successfully practiced by the interested industrial physician without undue or excessive demands on his time.

The practice of psychotherapy does not require so much in the way of strictly medical knowledge and diagnostic acumen as it does patience and sympathetic interest in the employee as a person. Patients with personality maladjustments or neurotic tendencies usually always need more than mere assurance that they are free of organic disease. Psychotherapy begins when the physician takes interest in social and environmental factors and applies his technics for impersonal consideration of facts to the personal life of the individual. In such instances it becomes necessary to give the same attention to qualitative and quantitative aspects of emotion, stability, drives, capacity for persistent effort, initiative, maturity and motivations as the physician ordinarily gives to tissue lesions caused by trauma and bacteria. The clinical picture of the patient as a whole is distorted if the physician handicaps himself by singling out only those complaints and behavior changes which suggest physical malfunction and disregards those which in terms of neuronal circuits are functionally (electrochemically) related to attitudes and the satisfaction of emotional needs.

Because of the tremendous number of variables which enter into the emotional makeup of different individuals, it is next to impossible to set up detailed diagnostic criteria into which all the minor personality determined problems of industrial practice can be fitted. However, on the basis of the presenting complaints, personal attitudes and reactions it is usually possible to single out at least a few of the predominant emotional trends, and these often give excellent clues as to the type and extent of psychotherapy which will be required. As an example of the first step in such an approach, the following list presents in the order of frequency the varieties of psychosomatic disturbances found in the initial contacts with 40 unselected industrial workers and supervisors who appealed for psychiatric consultation or were referred for interviews:

1. Emotional instability and overexcitability under stress.
2. Rigidity, lack of adaptability.
3. Feelings of inferiority.
4. Egocentricity, overaggressiveness, lack of social consideration.
5. Inadequacy in attitude and responsiveness.
6. Love affairs, sex and marital problems.
7. Oversensitivity.
8. Pronounced feelings of insecurity.
9. Inappropriate self-protective defense reactions.
10. Habitual overuse of alcohol.
11. Visceral symptoms related to emotional tensions.
12. Poor attendance record.
13. Preoccupation over disturbing home and family situations.
14. Personality eccentricities and mannerisms.
15. Definite introvert or schizoid tendencies.
16. Poor organization, lack of regularization in habits.
17. Relative intellectual defect.
18. Special fears and anxiety reactions.

As might be expected, most of the persons in this small series had more than one symptom indicative of emotional subhealth and psychic unrest, the average being three for each employee. Regardless of the relationship between symptoms and coexisting or associated physical disorders, it is remarkable how willing and even eager the great majority of such persons are to discuss personality factors as such when the opportunity is presented. In many instances the relationship of such personal problems to lack of efficiency on the job is frankly acknowledged and adds further incentive to the acceptance of authoritative assistance and counsel.

With the stage thus set for psychotherapeutic contacts, it might be well at this point to review those methods open to the industrial physician or consultant which do not require extensive knowledge of psychiatry. In a recent book on this subject, Levine [1] listed some thirty general methods of psychotherapy which are used by the medical practitioner, and only five of these require added training and aptitude. When these are modified and adapted to fit into the industrial setting, they tend to fall into three overlapping categories: those which are an intimate part of routine procedures, those which

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Levine, Maurice: Psychotherapy in Medical Practice, New York, Macmillan Company, 1942, chapter 2.

might be termed "psychiatric first aid" and those which come into play when there is need and opportunity for extended private interviews and follow-up contacts. Some of the technics included in such an inventory are as follows:

1. Physical examinations as psychotherapy.
2. Physical therapy as psychotherapy.
3. Laboratory tests as psychotherapy.
4. Medicinal treatment (including placebos and sedation) as psychotherapy.
5. Guidance, interpretation and medical advice.
6. Giving diagnostic information with authoritative firmness.
7. Reassurance.
8. Minimizing or ignoring certain symptoms and attitudes.
9. Emphasizing a balanced daily routine (work, rest, food, recreation).
10. Drawing attention away from symptoms by praising healthful attributes.
11. Suggestive therapy.
12. Development of hobbies.
13. Encouraging socialized living and participation.
14. Pointing out opportunities for healthy identifications.
15. Sympathetic listening; confession and ventilation.
16. Provision of acceptable outlets for aggressiveness.
17. Provision of acceptable outlets for fears and inferiority feelings.
18. Provision of acceptable outlets for frustrated affective needs.
19. Lessening environmental strain, both industrial and non-industrial.
20. Using consultations with wife, relatives or home physician as psychotherapy.
21. Transferring to new occupation or environment.
22. Recommending additional training.
23. Changing attitude of supervisors.
24. Provision for rest or change through leave of absence.
25. Discussion analysis and desensitization.
26. Persuasion and reeducation.
27. Referral to consultant or specialist as psychotherapy.

Such a list could be extended indefinitely, but it must be emphasized that the effectiveness of all such measures depends as much on the individuality of the physician as the patient. The extent to which psychotherapeutic technics are used and the order in which they are woven into the physician-patient relationship will depend largely on specific needs and circumstances in each individual case. With neurotic patients as with children, emphasis should be placed on simple, workable procedures in which the patients participate, rather than on negative aspects or prohibitions. The key significance of the first interview should constantly be kept in mind by the psychotherapist. Some contacts are made much more effective if the physician stresses the necessity for a follow-up interview or even calls the patient in before he would ordinarily return with further complaints. Even in those instances in which the nature of the psychiatric problem goes beyond the scope and responsibility of the industrial physician, referral and cooperation with outside consultants can be greatly facilitated when inplant contacts are established in this way.

Preliminary observations from the application of these methods to the 40 cases mentioned indicate that good therapeutic response was obtained in 45 per cent, fair results in 38 per cent and no significant improvement in 17 per cent. Practically all in the third group were found to be in need of more intensive therapy than is possible on an inplant basis, and 3 have terminated their employment up to the time of this writing. Although observation and treatment of these individuals is still in process, it is of interest that the number of contacts per case was only 3.3 and that the average time spent over a six months period was a little under one and one-half hours per case. This does not seem excessive in comparison to the time often required for repeated visits to the physician for minor complaints, not to mention the inefficiencies on the job, when no effort is made to influence personality and emotional factors. It is especially gratifying to note that some degree of improvement in job relations was effected in 10 cases after only two interviews. As a rule when therapy is effective, follow-up contacts are progressively much shorter than the initial ground breaking interviews.

While industrial physicians and consulting psychiatrists are by no means the only individuals with personnel functions in industry who employ psychotherapeutic technics, it goes without saying that by virtue of their medical training and clinical experience they alone are best qualified to take authoritative leadership in the application of such methods to management and employee problems. Beyond enlarging the scope of their services to individual patients by more actively employing psychiatric insights, industrial physicians have another and still larger obligation—that of teaching both by example and in more formal ways the philosophy of this approach to management, foremen, employment interviewers and last but by no means least their own assistants, the industrial nurses.

LABOR-MANAGEMENT RELATIONSHIPS IN INDUSTRIAL HEALTH PROBLEMS

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Industrial hygiene as a science and as a public health service has been developed with the objective of protecting and promoting the health of the working population in an industrial system. Its development has been the result of a parallel growth of responsibility on the part of management and governmental agencies. Management has had an economic interest in preventing accidents, disease and premature death. Governmental agencies have taken action in solving industrial health problems because such action is a proper obligation of public agencies. Labor, as represented by both organized and unorganized workers, has had a lesser role in this development, largely because strong organization is necessary for effective action, and until recently unions have not been well enough established to allow them to give attention to the advancement of special welfare programs. Today, more than ever before, management is concerned about the workers' health because every available adult is needed on the job to produce. Labor unions have now gained the means and the leadership to make possible the initiation of progressive action in the health field.

There are many difficulties in the way of effective labor-management cooperation in applying industrial hygiene knowledge, which must be recognized at the outset in attempting to bring these partners together. Since management and labor both have so much to gain by cooperative and intelligent application of industrial hygiene methods, it is tragic that so much controversy, misunderstanding and resistance on both sides still exist in many industries.

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Management has developed health and safety rules and regulations in most instances without consulting the workers. The workers have at times used their union strength to oppose measures which would benefit them. There are still many companies and unions whose activities show no evidence of consideration of the health needs of the workers and the necessity for a healthful working environment. Despite new signs of increased interest in workers' health on the part of unions, some segments of labor are apparently still more concerned for compensation benefits than for prevention of the conditions which caused the compensable injuries —injuries which can never be compensated by cash benefits. On the other hand, attitudes of management toward industrial hygiene run the entire gamut from paternalism to neglect. In general, most large industries have an enlightened approach to industrial health, which insures to their workers high quality service and constant attention to the working environment.

What is really needed on the part of both labor and management is a new policy—a new attitude toward this question of industrial health. There is no reason why some formula could not be devised to harness the power of labor organizations with the splendid organization which management has created in many plants, so that the two will not oppose each other but pull together as a team toward the common goal.

Whatever gains management has made in the acceptance of progressive industrial health programs have been the result of many years of slow education—experience earned the hard way. Because of the requirements imposed by certain types of workmen's compensation acts, management first began to establish medical departments solely for the treatment of traumatic injuries, in accordance with the requirements of the laws. Gradually, management realized that there were other phases of the problem in need of attention, and it began to extend its surgical treatment work into such functions as preemployment and periodic physical examinations and, in recent years, medical and engineering control of occupational diseases and job placement. At the present time attention is being devoted, on the part of some of the larger concerns, to such problems as general illness among workers and such factors as fatigue, dental hygiene, nutrition, mental health and similar adult health problems.

It would seem that we are now passing from the strictly machine engineering age to the human engineering era. In other words, where in the past attention was given mainly to the improvement of machinery and processes, today management is beginning to be concerned with the economic waste resulting from the failure to provide protection for its workers against controllable or preventable occupational health hazards. Not all of these advances have been achieved without trials and tribulations. Perhaps it was necessary for a national emergency such as the present one, with its emphasis on production and the need for the conservation of manpower, to point up the importance of the human element in a highly industrialized nation.

Labor has just demonstrated how an effectively organized group can function successfully on the political front. This too has taken many hard years of work to achieve. There is no reason why labor cannot accomplish similar tasks in relation to other gains, and especially on the social front. Today labor is beginning to show an interest in health and safety services, and it portends to become widespread, vocal and specific. The unions are recognizing more and more that their contributions to the well being of the individual worker must parallel their activities for economic betterment and conditions of employment. However, labor should go slowly and recognize that it has a good deal to learn in the field of industrial health. It should work for a constructive program as an end unto itself and not use health problems merely as a means to obtain concessions, such as higher wages and shorter hours. It will probably not be necessary for labor to go through as long a period of education as it took management, since many of the patterns in this field have already been developed, but it would be well for labor, and especially its leaders, to study the various problems carefully before striving for demands either through collective bargaining or through some forms of legislation. Labor will find official and nonofficial health agencies ready to assist in this educational process.

Recent efforts to obtain labor-management cooperation in many fields vital to the nation's economic life give promise, so that ultimately these two powerful forces may come together in a mutual endeavor for the common good. Some industrialists may feel outraged at the mere thought of giving labor some voice in the management of any part of its affairs. On the other hand, many have recognized that the rank and file workers have resources of intelligence, ingenuity and enterprise which industry can utilize. By the intelligent use of these resources, management will not only do a better production job but at the same time will take a real step forward in establishing the worker as an individual, thereby doing away with one of the main difficulties in the field of labor relations.

Such action does not necessarily mean that labor will run management's business or that such a business will be run by a committee of labor and management. After all, management owns the plants and provides for safety and health in accordance with certain legal requirements. Such being the case, no one has the right to force management to do certain things when it is only management which is held responsible. In other words, nothing must be done to interfere with or reduce management's responsibility, so that it may direct the health and safety program properly. On the other hand, there is no reason why labor should not contribute in an advisory capacity many helpful suggestions which could be adopted and carried out by management. In fact, as has already been stated, there are many ways in which management and labor can work together, not only in the field of industrial health but in the field of production, training of personnel and in similar ways.

However, cooperation between labor and management appears still to be in its infancy, in spite of the impetus given to such cooperation in the present need for all-out production. More education in the technic of cooperation is needed for both industry and the unions, especially at the plant and local union level. The pattern is cut—it can fit and should be used much more widely and in more diverse fields than it is now, particularly in health and welfare activities, which should be of permanent concern to labor and management.

Labor-management committees sponsored by the War Production Board have served a useful function in stepping up production for the war effort. However, where they have functioned in the permanent health and welfare activities, the results have not been impressive. In those industries where good labor management relations already existed, some progress has been made in safety and health programs. In others, attention to workers' health has been perfunc-

tory. In most instances emphasis has been placed on accident prevention—the one field which has been an established, legally protected activity over a period of thirty years. New opportunities for the improvement of working conditions and workers' health have not been explored and exploited intensely by the labor-management committee. Fragmentary reports which have been received from the War Production Board show activities for safety, better nutrition, better sanitation and general health promotion, in about that order of importance. For example, a large automotive vehicle company employing approximately 10,000 workers and the union, a U. A. W.-C. I. O. local, formed a War Production Drive Committee in 1942. The general committee and numerous subcommittees each had equal labor and management representation. The health and safety subcommittees reduced the accident frequency rate by 25 per cent in one year. Through the action of the labor-management committee, a safety engineer was employed full time. The reporting of unsafe practices and unsafe conditions to the health and safety subcommittee was encouraged. Despite an increase in man-hours worked by nearly a million and the addition of some 500 new workers, the accident frequency rate of 23.9 disabling injuries per million man-hours was reduced to 18.6. The committee also sponsored a vaccination program, with the aid of the medical department, and 3,000 workers were vaccinated. Chest x-ray examinations were made available to all employees on a voluntary basis.

Other evidence shows that health and working conditions are subjects of vital importance to the workers, although there may be no organized effort on the part of workers to improve them. This is attested by a recent statement from a labor-management committee which questioned some 1,300 new employees in a plant relative to the subjects they considered most important to their welfare. Some 36 per cent of these new workers stated that safe and healthful working conditions were most important, stating that employment was the next important subject, with about 16 per cent indicating their concern with this factor.

Mr. V. P. Ahearn, industry member of the National War Labor Board, recently stated:

> There is hardly a major case coming before the War Labor Board which does not involve, at one stage or another, a demand that something shall be done . . . to improve industrial health. Even though the demand may not meet the objective, even though it may be unworkable, nonetheless the reality of that demand is something that practical men in industry cannot ignore.

There are some leaders in both labor and management who, although not condemning labor-management committees in outright fashion, still feel that their scope has been restricted to such an extent that these joint programs have been vitiated. For example, Mr. Robert Watt, labor member of the National War Labor Board, feels that the work of these committees has been restricted to the old company union function of concentrating on ways to obtain more effective effort from the workers. According to him, labor does not object to such results but regrets that this important function was not knitted into the fabric of union representation in accordance with established public policy of a democratic nation. Mr. Watt feels that collective bargaining has served already to accomplish far more than these committees can do. He feels that the present National War Labor Board itself is the best demonstration of the value of economic democracy. Since this board has accredited representatives from management, labor and the public, such action places on the labor movement the necessity of maintaining effective and responsible leadership. It has made the interested parties in industrial relations shoulder the obligation of facing and solving issues. According to Mr. Watt, on any question of any importance there should be participation by representatives of labor and management, with authority to help analyze problems, seek solutions and formulate remedies.

This brings us to the role which collective bargaining has played in the field of health, safety and insurance. The union agreement negotiated through collective bargaining between management and labor offers one channel for the improvement of industrial health and working conditions. Health and safety provisions are specified in a number of existing contracts, a practice which was followed by many unions for many years. However, a study of the health and safety clauses shows that these provisions have been made in order to protect workers from unfair application of company regulations, to right some specific grievance or to correct some single outstanding hazard. As far as one can determine, no union agreement provides for a broad industrial health program in the industry with a view to long-term reduction of sickness and promotion of positive health. The health and safety clauses recently written by the U. A. W.-C. I. O. Health Institute for the guidance of local unions in the negotiation of future contracts are the nearest approach to such a contract. The chief provisions of these proposed health, safety, group insurance, and compensation clauses deal with such things as the formation of health and safety committees with equal representation from labor and management and discusses the duties of such committees with reference to the evaluation and control of the industrial environment. Such functions as reporting of injuries and illnesses to the committee, the provision of adequate emergency medical services, free periodic physical examinations and special provisions for women in industry are also highlighted in these suggested clauses. These clauses are perhaps the first attempt to negotiate for a broad industrial health program, but in their present form they will need considerable revision, since some of the demands are unnecessary or impracticable, while others, if not administered properly, would tend to impair the rights of management.

PHYSICAL EXAMINATIONS

In general, existing health and safety clauses in union agreements fall into three categories: (1) provisions with regard to physical examination of workers, (2) safety and health provisions and (3) insurance benefits. Let us consider the first and most controversial point—physical examinations. Until recently, neither management nor labor has fully understood how to utilize properly the physical examination as a technic for the improvement of the health of the industrial worker. In the past, routine preemployment and periodic examinations have been made a company requirement in order to protect management in compensation litigation and to reduce the costs of insurance premiums. Labor, on the other hand, has insisted on contract clauses or laws designed only to protect workers against unfair use of the examination rather than making it a health service to the worker.

We must recognize, first, that the physical examination is more than a medical problem. It is also a socioeconomic problem. The man who has spent his working life in one industry and has acquired seniority

and a higher wage scale cannot be expected willingly to accept placement in a less arduous but less remunerative job, even though it would save him from premature death due to a heart condition discovered in the examination. Enlightened employers recognize this problem, even though they have not yet provided the answer.

Perhaps this is one of the many problems in health and welfare which can be solved satisfactorily only by national and state legislation to provide adequate economic security for the workers handicapped by accident or disease. We have cases on record in which an attempt has already been made to deal with situations of a somewhat similar character. For example, when the state of Pennsylvania adopted its occupational disease compensation act it recognized that there were already many workers in the state's industries who had acquired certain diseases of occupation prior to the date when the law became effective. It also recognized that the last employer would be unduly penalized if he was made to carry the entire burden of the compensation to which some of the workers would be eligible, even though they might not have been employed in his plant long enough to acquire such diseases or conditions. For this reason the state of Pennsylvania created a special fund of $100,000 out of the general tax fund and gave it to the State Workers' Insurance Board for payment into a state workmen's insurance fund for the credit of the Second Injury Reserve Act. This fund was to be used for a perid of ten years and was an attempt to apportion equitably between the last employer and the state fund the amount of money due a worker. After the expiration of a ten year period, the employer was to pay the full compensation for disability or death.

It has also been suggested by leaders in the field of compensation administration that such funds be employed to take care of older workers whose earning capacity has been lowered. To take care of such contingencies it will be necessary to maintain a solvent second injury fund. This could be done by several methods, one of which would be through general taxation.

The war emergency has stimulated better use of the physical examination by management, since the shortage of manpower has made it necessary to accept for employment thousands of physically handicapped workers and others whose general health is substandard. It is unfortunate, therefore, that some segments of labor still resist actively the requirement for routine physical examinations. For example, there is one powerful union which has even written into its contract with management that no preemployment physical examinations should be given. As a result of this attitude, many of the plants operating under such a contract have experienced an enormously high labor turnover, since they have been forced to hire thousands of persons whose handicaps could not be studied and related to the job requirements.

It is difficult to understand such unenlightened attitudes of some labor leaders. If the purpose of a national health program is to attain national physical fitness for the people of this country, greater use must be made of a careful objective medical examination of more individuals. Its use in industry has contributed and can contribute greatly to public health if the problems associated with the physical examination of workers are solved. These problems can be solved if all interested groups get together and put their minds to it.

Management, labor and the medical profession have taken this step. The Council on Industrial Health of the American Medical Association in 1944 called together representatives of the American Federation of Labor, the C. I. O., the National Association of Manufacturers, the U. S. Chamber of Commerce and the casualty insurance companies. This group of competent authorities defined the purpose, scope, procedure and proper use of the physical examination. Their report has already been approved by the American Medical Association and by the other interested groups. Thus, management and labor have an authoritative guide to the constructive application of preventive medicine. Let us hope that it will be used.

The most significant feature of this guide is the definition of the purpose of the occupational physical examination. This report states that:

> The purpose of industrial health programs is to promote and maintain the physical and mental welfare of all industrial employees. Health examinations in industry are a means to this end.
>
> Unjust or questionable exclusion from work through improper application of the findings on health examinations in industry is against the public welfare and contrary to sound industrial health principles.
>
> From the public and industrial health standpoint, the only absolute bars to immediate employment in nonhazardous occupations should be:
>
> 1. Communicable disease.
> 2. Mental illness in which impaired judgment or actions prevent cooperative effort.
> 3. Incapacitating injury or disease.
>
> Other considerations related to employer liability, workmen's compensation, factory acts and health codes must be determined separately for each jurisdiction.

The liberal policies enumerated in this report on the use of medical records and appeals are worthy of special attention. These are too long to reproduce here, but, with regard to the preservation and use of records of industrial health examination, the confidential character of such records is to be rigidly observed and access granted only on written consent of the worker. However, I should like to reproduce the exact words of this report on the important and previously troublesome subject of review and appeal. On this point the report is very clear and specific, and states:

> When a worker has been physically examined, and the doctor making the examination reports that he is physically unfit for any work or for certain classes of work, which report may have an adverse effect on the employment of such worker, the following procedure shall apply:
>
> The worker may designate a physician of his choice and request a review of the findings made by the examining doctor. These two physicians may proceed to render a joint report. If they are not in agreement, then a third physician, agreed on by the two reviewing physicians, shall be selected and his findings shall be final. If the two physicians cannot agree on a third physician, then the chairman of the industrial commission in the state in which the plant is located shall make the selection.

HEALTH AND SAFETY

Undoubtedly industry and unions will continue to include health and safety provisions in their contracts, perhaps for some years to come. The purpose should be to broaden these provisions to encompass a comprehensive industrial health program in which both management and the workers will participate. As a guide, I should like to suggest that the basic health considerations in collective bargaining should include:

> 1. A labor-management committee, of equal representation, to advise the union and management on health needs of the workers and on ways and means to meet the needs.

2. In-plant medical services, adequate in scope and quality, and acceptable to both labor and management.

3. Preplacement and follow-up physical examinations conducted under the policies outlined by the report of the Council on Industrial Health of the American Medical Association and supplemented by careful job analysis for proper placement.

4. Routine industrial health surveys of working conditions by official industrial hygiene agencies or similar disinterested agencies acceptable to the committee.

5. Compliance with recommendations made by the surveying agency for the improvement of working conditions.

6. Promotion of special public health services in the plant for the improvement of individual health, such as nutrition programs, mental health services, dental care, communicable disease control and health education.

The major health problems of the working population, however, cannot be solved by union agreements or by management or by labor alone. A comprehensive national health program administered by state and local governments would meet the needs of all groups for health and medical service, hospital care and prevention of disease. Present federal and state laws on the subject of health maintenance are undoubtedly inadequate and are certainly not uniform. Labor, on the whole, is dissatisfied with present legal provisions of health and safety and for their enforcement. That is why, of course, labor is attempting to gain such benefits through collective bargaining procedures. Recently the Congress of Industrial Organizations passed a resolution on national and state legislation dealing with health and safety. This resolution calls for action on an educational program to inform the general public, as well as its own members, as to the desirability and necessity of providing and enforcing adequate standards of protection against the hazards of employment.

There is no doubt that our present laws on this subject need to be strengthened. Take, for example, our present provisions for industrial hygiene in the various states. Although considerable progress has been made on the part of the states during the past eight years in this field, still, even today, there are nine states which have no industrial hygiene services as such, and the thirty-nine states which do provide such services spend only approximately $1,250,000 for such activities. This sum, half of which is allotted to the states through federal grants-in-aid, permits but a small coverage in the way of services to the fifty odd million workers of this nation. Obviously there is a need for more funds, more state and local financial participation and more trained professional personnel to do an adequate service job in our industries.

For these reasons it would be far more preferable to revise and strengthen our present laws on health and safety requirements and especially their enforcement provisions so that benefits of such laws could be applied to all workers rather than to those who happen to be strong enough to obtain concessions through contracts. To this end we need the support of labor as well as management, with both getting behind proper legislation which would provide state health authorities with the necessary funds and trained personnel and the authority to do their job effectively. Such action is a far more democratic method of accomplishing the desired objective than through collective bargaining procedures alone and in addition would serve the millions of workers who are unorganized. Through such collective action on the legislative front the rights of neither management nor labor, nor their free functioning, will be impaired.

Any action taken, however, must be preceded by careful study of present industrial health laws, regulations and services by labor union leaders, with widespread discussion of proposed action among all union organizations, in order that there may be a unified attack on the problem. A first step in developing the required understanding at all levels of union organization would seem to be the appointment of individuals to the executive staffs of national and state union organizations, and to each international union staff, with responsibility for full time attention to health. Such persons should be given proper orientation in the health field through contact with health agencies and, if possible, through organized study of industrial and public health. Their function would be to maintain close working relationships with all health agencies and represent their organizations in all cooperative planning of activities among agencies concerned with health programs. These health advisers could assume leadership in organizing educational programs on health for union members through all the channels of union organization and activity.

In conclusion, I would urge that those of us who have an interest and an obligation to work with unions should help them in every way possible to attain their objectives, first being sure that sound objectives are established through full understanding. At the same time we should lend our aid in helping other groups to appreciate the fact that unions have a contribution to make and that statesmanlike cooperation can be expected where confidence is established on all sides.

LOCAL ORGANIZATION FOR EMERGENCY SERVICES

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In this country perhaps more than in any other a fashion, a song, a word, an expression, a mechanical gadget or an idea, when it happens to strike the popular fancy, sweeps over the country like a prairie fire. Many of these pass and disappear as rapidly as they came, but others, when they are bolstered by an outstanding personality or by systematic and persistent advertising, may continue indefinitely and may become, so to speak, a part of our folklore. Some of these things, especially gadgets and ideas which are associated with the use of gadgets, are immediately taken up by commercial exploiters who proceed to "cash in"; and as the cash rolls in, or even before, a corporation is organized, partly to hide the identity of the exploiters and partly to increase the take by all the means known to high pressure exploiters. One of the principal methods is advertising, which, to a considerable extent, has become the art of misleading people into acquiring things good or bad, whether or not they are needed. In fact, one of the main objects of advertising is to induce people to regard as desirable or necessary objects which are not at all essential or which may even be harmful.

During the past quarter of a century, or since the first world war, a peculiar situation has developed. Whenever a person drowned, or when breathing ceased for any other reason, the relatives immediately called, not a physician, but the fire department or the police department, because one or the other of these departments maintained a rescue squad which was subject to call at a moment's notice. Sometimes a physician also was called, but often enough the physician was busy elsewhere or, when he arrived on the scene, the rescue

From the Section on Therapeutic Radiology, Mayo Clinic.

squad of the fire or police department had already taken over the situation as well as the responsibility. Or perhaps the demands of a busy practice did not permit him to disregard them in order to take charge of an emergency situation which might detain him for an hour or longer. Gradually this practice has grown until now it is the accepted method of dealing with emergencies of this kind, not only in large cities, but even in small cities throughout the country.

How and why did this practice develop? The idea of organizing rescue squads among firemen and police officers was a perfectly natural one. During the course of many fires some persons, including some of the fire fighters themselves, are overcome by smoke or chemical fumes of one kind or another. The importance of immediate attention for these persons is so great that every minute counts. Any delay may mean the difference between life and death. Hence the organization of rescue squads was an eminently sound idea. Moreover, fires do not occur frequently, and members of fire brigades have much time on their hands, which they occupy in refurbishing their equipment or polishing the seats of their pants. By the very nature of their work police officers have less time to waste, but some of them have plenty of time to play cards, especially at night, when life in a police station often is a boring experience.

A second reason for the organization of rescue squads of firemen or police officers was the example provided by many large industrial plants, which, in order to diminish the loss of labor resulting from injuries incurred by their workmen, to diminish the claims for injuries sustained in the course of employment or to meet the requirements of the compensation laws of some of the states, organized and maintained, in connection with their welfare service, a department for the emergency treatment of injuries as well as rescue squads to deal on the spot with the effects of certain kinds of accidents. Thus telephone companies found it expedient to train squads to rescue some of their linemen through whom a strong charge of electricity had passed. As is well known, when contact with a live wire causes an excessive charge of electricity to pass through a person, the immediate effect is either fibrillation of the cardiac muscle or spastic contraction of the heart as a whole, according to the charge of electricity; and respiration ceases. Artificial respiration, when promptly instituted, can save many victims. But to wait until a physician can be called and until he can arrive would be to lose the chance of saving some of these men. Much the same is true of men working in mines who are affected by chemical fumes, by cave-ins or by electrical injuries. Large steel mills also have maintained departments for emergency treatment of all kinds.

Perhaps a third reason for the organization of these squads was the invention of an automatic breathing machine which was known as the pulmotor. This machine having been invented about 1911, what could have been more natural for its manufacturers to do than to persuade fire and police departments to organize rescue squads whose members were trained to use the pulmotor? Although the precise relationship between the invention of the pulmotor and the organization of special squads of firemen or police officers cannot now be absolutely established, certainly the rapid and widespread organization of these squads and the increasing use of the pulmotor or other artificial breathing devices of the same general description was not a coincidence.

As it was first designed and used, the pulmotor actually was dangerous because, being built on the principle of suck and blow and the degree of suck and blow not being absolutely controllable within safe limits, the possibility of injuring the lungs by excessive pressure was not eliminated. There is reason to think that, during the early stage of its development, the pulmotor may have done as much harm as good. Another dangerous possibility was that, as the result of publicity and the misleading claims which were made for this device, there was a strong tendency, when an accident occurred, to neglect ordinary and well known methods of artificial respiration, which do not require mechanical apparatus of any kind, and to wait for the pulmotor squad. The effect of this tendency was that, as a result of the delay, many persons died who might have been saved if more prompt measures had been taken. Later, the dangerous feature of the pulmotor, which resulted from the absence of an effective means of controlling the pressure of air, was eliminated when an automatic regulator of pressure was added.

Since then other similar devices built on the same general principle and incorporating automatic control of air pressure have been designed and placed on the market but, unless they are employed by some one who is thoroughly familiar with the process of respiration under normal as well as under pathologic conditions, mechanical apparatus of this kind may be, and no doubt often is, quite ineffective. However, unscrupulous advertising and high pressure salesmanship have led the general run of people to have an excessive and unwarranted faith in these devices. Indeed, the faith of Americans in mechanical gadgets of all kinds is astonishing and rather childish. But this is not the point which I should like to stress. It is about time to return to our rescue squads of firemen and policemen, who, in a preceding paragraph, were left peacefully enjoying their game of cards.

On the whole, men working in large industrial establishments or in mines or employed by public utility companies are cared for as well as they could be under any circumstances. What interests me at the moment is the provision of a similar grade of care for the public at large, and it is this phase of the problem which I should like to discuss.

To my simple mind, arrest of respiration and of heart action, whether caused by drowning, by an excessive charge of electricity, by smoke or gas fumes or by any other means, is as much a medical problem as nephritis or pneumonia. But accidents of this kind often occur under circumstances which constitute a special problem. Rescue squads of firemen or police officers are only a makeshift arrangement which is far from rational. The fact that these squads receive special training and that often their ministrations are more effective than would be those of physicians who have not had special training and experience in methods of resuscitation is beside the point. No matter how well firemen or police officers may be trained to perform artificial respiration or to run a mechanical breather, they cannot be expected to know the difference between drowning, an attack of heart disease, cerebral concussion and cerebral hemorrhage. Of course, special circumstances may give an intelligent layman some idea of the nature of such an accident, but it is not a rare occurrence for a police officer to mistake cerebral hemorrhage for an excessive dose of alcohol.

For many years, as a member of the Council on Physical Medicine, I have had the opportunity to hear many discussions of the problem of resuscitation and of many phases of this problem. More and more it has

seemed to me altogether incongruous that the present situation should have been allowed to develop. Lately my thoughts on this subject have crystallized in a certain direction and I am taking the liberty of submitting these thoughts for your consideration. It seems to me that this situation could and should be corrected and that all rescue activities, outside of coast guards and other similar guards at public beaches, should be reorganized on a different basis.

The medical profession should assume the responsibility for organizing emergency or rescue squads to take care of resuscitation and other first aid measures, as well as the removal of emergency cases to hospitals. This would necessarily mean one of two things: either that the physicians of each community should, on their own initiative or on the initiative of the county or state medical association, organize an emergency service for full time duty or that the state departments of health should be made responsible for the organization and operation of these emergency services. Physicians selected for this service might perhaps be on duty for a week at a time, one group during the day and one group at night, and have at their disposal an ambulance, fully equipped to deal with any emergency that might arise.

It is true that, at the present time, hospitals have ambulances and interns or residents who take care of emergency calls; but the young physicians who take care of these calls have had only limited training in medicine and have not had special instruction in resuscitation, whereas the emergency services or squads which I have in mind should be composed of experienced physicians, with special training in resuscitation and all other emergency situations. An alternative, or perhaps only a supplement to the foregoing suggestion, is that each city should have a centrally situated emergency medical station. This would be most important in cities with a population greater than 100,000 and especially in cities with a population greater than 1,000,000. In the largest cities it might be necessary to have substations strategically situated according to density of population.

The organization and supervision of such highly trained medical emergency and relief units should be undertaken by the medical profession itself. However, in the case of central emergency stations and substations the municipalities or the states should be persuaded to furnish buildings and necessary equipment, including ambulances and so forth, and should also pay the salaries of the physicians and all other expenses, subject to reimbursement by the patients or their relatives. To allow the present fashion of police and fire department squads to attend to medical emergencies seems entirely incongruous.

It is realized that such a step could not well be taken now or until the end of the war, but there is no valid reason why plans should not be made to adopt this principle and implement it as soon as the war has ended. If the American Medical Association were to adopt the principle of this plan and so inform the medical societies of the different states, this action would have great influence. Naturally, it would take time to apply the principle, especially in the larger cities, but, as soon as the circumstances allow, steps should be taken in this direction.

One way to accomplish the desired result, once the principle has been adopted by the medical profession, would be to undertake a strong educational campaign, which should be continued until the public demands action. It is possible that, in order to induce municipal or state politicians to provide funds for buildings and ambulances and to pay physicians instead of firemen or police officers, some kind of coercion would be necessary. But if an adequate educational campaign should be conducted, the acquiescence of political bodies would be imposed by the public demand. The most effective way to obtain political action is to build a fire under a legislature and to keep the fire going until the legislature is forced to move.

PSYCHIATRIC REACTION TO AMPUTATION

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Many surgeons have emphasized the importance of the psychiatric or psychologic components of the total problem of limb loss, stump construction and training in the productive use of prosthetic devices. As an example, MacDonald [1] has stated that "the surgeon has a definite

TABLE 1.—*Frequency Distribution*

	Battle Casualty	Nonbattle Casualty
Upper	23	9
Lower	48	14
Double	5	1
Total	76	24
Total casualties	100	

TABLE 2.—*Mean Age Distribution*

	Battle Casualty		Nonbattle Casualty	
	Mean Age	No. of Cases	Mean Age	No. of Cases
Upper	23.9	23	24.5	9
Lower	27	48	28.7	14
Double	24.8	5	37	1
Total	25.2	76	30	24

Total amputees.....100 cases
Mean age.....26.7 years

TABLE 3.—*Types of Amputations*

Type	Battle Casualties	Nonbattle Casualties
Upper		
Above elbow	7	4
Below elbow	16	5
Lower		
Above knee	26	7
Below knee	22	7
Double	5	1
Total	76	24
Total casualties	100	

responsibility in stimulating confidence and in teaching the man to use his appliance. Overoptimism on the part of the patient at the beginning is sometimes followed by an equal degree of depression when he feels the weight of the appliance and he has his first difficulty

1. MacDonald, H. K.: Amputations and After Treatment, Canad. M. A. J. **47**: 229 (Sept.) 1942.

with his overenthusiastic attempts at walking." In spite of this attitude the reported studies on the psychiatric reaction to amputation consist, for the most part, of studies of phantom sensations. The complication of "phantom limb" has received much attention from many authors.[2] There is no general agreement as to the peripheral or central origin of these phenomena, but most writers agree that there is at least a psychologic component in all such cases. We have attempted to resist the temptation to write on this phase of the problem because we feel that the individual's total reaction to his injury and his adjustment to it are of greater importance to his future usefulness and comfort than any sensations that seem to come from his missing member.

METHOD

The 100 patients studied were selected at random from the card file index in the orthopedic section. Patients who had been referred for neuropsychiatric consultation were excluded, only those patients considered "normal" by the physicians and nurses remaining in the series. The purpose of the study was explained to each patient, and each was told that he could refuse to participate if he wished. No one refused and most patients seemed anxious to participate. A detailed social history was taken by a Red Cross social worker, and a Rorschach test was administered by a psychologist. The Rorschach records were scored and interpreted on a "blind" basis by one of us. Psychiatric evaluation of the data was made by another and the orthopedic care administered by the third.

TABLE 4.—*Immediate Acceptance; Type of Amputation*

Type of Casualty	Number of Patients	Shame		Self Pity		Lucky		Mother-Family		Depression		Severe Psychiatric		No Emotional Responses	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Battle															
Upper	23	0	0	0	0	11	48	4	17	6	26	1	4	1	4
Lower	48	0	0	1	2	20	42	7	15	15	31	1	2	4	8
Double	5	0	0	0	0	1	20	1	20	2	40	1	20	0	0
Total	76	0	0	1	1	32	42	12	16	23	30	3	4	5	7
Nonbattle															
Upper	9	0	0	0	0	0	0	0	0	8	89	1	11	0	0
Lower	14	0	0	0	0	0	0	3	21	6	43	2	15	3	21
Double	1	0	0	0	0	0	0	0	0	1	100	0	0	0	0
Total	24	0	0	0	0	0	0	3	13	15	61	3	13	3	13
Total	100	0	0	1	1	32	32	15	15	38	38	6	6	8	8

TABLE 5.—*Present Attitude (Intermediate Stage); Type of Amputation*

Type of Casualty	Number of Patients	Shame		Self Pity		Lucky		Mother-Family		Depression		Severe Psychiatric		No Emotional Responses	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Battle															
Upper	23	2	9	1	4	2	9	0	0	2	9	0	0	16	69
Lower	48	6	13	6	13	3	6	0	0	5	10	2	4	26	54
Double	5	0	0	0	0	0	0	0	0	3	60	0	0	2	40
Total	76	8	11	7	9	5	7	0	0	10	13	2	3	44	57
Nonbattle															
Upper	9	5	56	0	0	0	0	0	0	3	33	0	0	1	11
Lower	14	3	20	0	0	0	0	0	0	2	15	2	15	7	50
Double	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	24	8	33	0	0	0	0	0	0	5	21	2	8	9	38
Total	100	16	16	7	7	5	5	0	0	15	15	4	4	53	53

TABLE 6.—*Reaction of 100 Patients to Amputation*

	Immediate Stage		Intermediate Stage	
	Battle Casualties	Nonbattle Casualties	Battle Casualties	Nonbattle Casualties
Number of patients	76	24	76	24
	Per Cent		Per Cent	
Shame	0	0	11	33
Self pity	1	0	9	0
Lucky	2	0	7	0
Mother-family	16	13	0	0
Depression	30	61	13	21
Severe psychiatric	4	13	3	8
No emotional response	7	13	57	38

TABLE 7.—*Rorschach Tests*

	Signs of Anxiety	Sex Conflicts	Rejects
100 soldiers, a mixed group from 100 psychotic and 100 nonpsychotic	37	40	8
100 unselected neuropsychiatric consultations at university clinic	30	34	1
100 soldiers with amputations	67	81	2

The data were pooled and evaluated only after all had been collected. The series included 76 soldiers injured in battle and 24 injured in accidents incident to their training or noncombatant duties (table 1). The age average was 26.7 years (table 2 and the chart). All were well trained troops. It will be noted that lower extremity amputations were most frequent (table 3).

RESULTS

The reactions seem to fall into three fairly definite phases in terms of time: (1) the first or immediate reaction, (2) the intermediate period, beginning as the

2. Gallinek, Alfred: The Phantom Limb, Am. J. Psychiat. **96**: 1'3 (Sept.) 1939. Herman, Rudolph: Physical Therapy in After-Treatment of Amputations, M. Clin. North America **27**: 1109 (July) 1943. Pisetsky, J. E.: Phenomena of Phantom Limb, M. Bull. Vet. Admin. **20**: 320 (Jan.) 1944. de Rabinovich, Paulina H.: La ilusion de los amputados a la luz de los neuvos conceptos psicofisiologicos, Semana méd. **1**: 657 (April 2) 1942. Skillern, P. G.: The Relief of Painful Thigh Stump and Sciatica, J. A. M. A. **126**: 514 (Oct. 21) 1944. White, J. C.: Pain After Amputation and Its Treatment, ibid. **124**: 1030 (April 8) 1944. MacDonald.[1]

patient emerges from the shock and general reaction to the injury and ending when he masters his prosthesis and returns home, and (3) the late or final reaction, beginning when he goes home to reenter the civilian world.

The immediate reaction to the injury depends somewhat on the circumstances of the injury. Men who have survived an engagement or explosion with high casualties feel that they are so lucky to be alive that they have little concern about the details of the future. Whether this attitude will persist outside the hospital is a matter of great interest to us. Persons injured alone or as the only casualty at the time of their immediate group are more apt to be a little depressed and resentful at their "luck," but they still feel honorably wounded and have a good morale in spite of their doubts and misgivings about the future. Patients who have sustained injuries while absent without official leave or drunk or through carelessness generally have a poorer attitude, are more inclined to be depressed and resentful and are more apt to be disciplinary problems in the ward. The medical men and nurses in the aid and evacuation centers do much to aid the battle casualties in their initial adjustment. They usually discuss the use of prostheses, the training program and so on with these men at the time they learn of their injury. When one considers how busy they are it is worthy of high commendation that they take the time for this effective on the spot psychotherapy. We have no doubt that the high morale in the interior hospital is in part due to the fact that the men come with high hopes of regaining their usefulness as effective producers in our society. Pain is not the immediate sensation. Those not rendered unconscious at the time of the injury state that the extremity is numb, and some try to use the extremity before they note its absence. Most of this group state that the pain starts when they notice that the extremity is gone. Many patients become aware of the loss after they have had morphine and are in the aid or evacuation station. The phantom sensations seem to start at about this time. Many soldiers are fatigued and hungry when injured and are quite ill for a few days after injury. Persons in this group give little attention to the injury and often note the loss of the extremity after they begin to improve. The patients we have studied in detail have been in the later part of the immediate reaction or in the intermediate phase. One of us has observed many patients at the aid and casualty stations, but more detailed observations at this level are indicated.

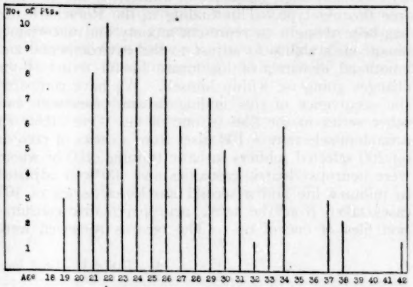
TABLE 8.—*One Hundred Patients with Amputations*

	Per Cent
Rorschach test:	
Serious psychopathologic conditions	50
Anxiety	67
Ross rating:	
Serious psychopathologic conditions	60
Clinical psychiatric study:	
Neuropsychiatric traits	64
Anxiety at this time	65

TABLE 9.—*Phantom Limb Sensations*

Casualty	Battle Casualties	Nonbattle Casualties	Total
Total patients	76	24	100
Sensations	71	24	95
Presence of limb	68	24	92
Pain	1	0	1

The next or intermediate phase comes with recovery from the general effects of the injury. Almost all patients need revision of the stump, repair of the flap, treatment of infections in the stump and so forth. Pain incident to these manipulations is often severe and frequently interpreted or felt as pain in some part of the missing member. These factors focus the patient's attention on his injury, and at this time doubts, uncertainties and depressive symptoms appear. Many are much concerned over the anticipated reaction to the limb loss by their mother, wife or sweetheart. Of interest is the fact that no patient in this series mentioned any concern over the father's reaction to his injury. We believe that this intermediate period is the critical one. At this time we have the anxieties, the depressions, the battle dreams and the seeking of relief in alcoholism. Nurses and ward personnel will almost invariably tell you that these patients have the highest morale of any group in the hospital. Many patients assure you that they feel fine and have no worries, present or future; in fact, one suspects that they feel too good. By this bravado they try to avoid questions and thus cover up the doubts and uncertainties which they do have. Once rapport is established they talk freely, and most of them are relieved at a chance to discuss their feelings, if only for a few moments. Tables 4, 5 and 6 show the incidence of feelings described as shame, self pity, lucky, depression and



Total age distribution.

TABLE 10.—*Social Adjustment in Amputees as to Type of Amputation*

Type of Amputation	Patients Showing Maladjustment Prior to Injury No.	%	Patients Showing Maladjustment After Injury No.	%	Total Number of Patients in Study No.	%
Battle casualties						
Upper limb	5	6	6	8	23	30
Lower limb	17	22	19	25	48	63
Double	1	1	5	6	5	6
Total	23	29	30	39	76	99
Nonbattle casualties						
Upper limb	2	8	1	4	9	38
Lower limb	7	29	9	38	14	58
Double	2	8	0	0	1	4
Total	11	45	10	42	24	100
Total casualties						
Upper limb	7	7	7	7	32	32
Lower limb	24	24	28	28	62	62
Double	3	3	5	5	6	6
Total	34	34	40	40	100	100

worry over mother and family in the immediate and intermediate phases of their adjustment to injury. A more objective evidence of the state of tension, uncertainty over the future and doubts about their future status as men is reflected in the Rorschach study. The Rorschach revealed that the patients in this series show an unusually high incidence of anxiety of the so-called free floating type. This finding in the Rorschach test has been thought to represent anxiety and uncertainty about one's ability to adjust to the environmental and emotional demands of his future life in terms of the changes going on within himself. We have compared the occurrence of this finding in our cases with two other series in the files of one of us. One (table 7) a random selection of 100 cases from a series of records on 200 selected soldiers in basic training, 100 of whom were neuropsychiatric casualties and 100 well adjusted to military life and a second unselected series of 100 cases taken from the active neuropsychiatric consultation files of one of us. (The records reviewed were all of those filed under A, B, C, D and some of E). The anxiety category just mentioned occurred approximately twice as often in the amputation cases as in the two groups used as "controls." The Rorschach tests in the amputation series show serious psychopathologic conditions in 50 per cent of the patients and anxiety in 67 per cent of the total series. The Ross Rating Scale (table 8), which is a compilation of various Rorschach signs, indicated serious psychopathologic conditions in 60 of the patients. The clinical evaluation indicated that about 64 per cent were having some difficulty in adjusting to their total life situation, the injury being an important part at the moment, and that 65 per cent were showing clinical signs of anxiety.

Ninety-five per cent of these patients had phantom sensations of some type (table 9). The symptoms vary from feeling that the limb is normally present to sensations of cramping, aching and itching. The fear that the phantom sensations were abnormal and represented insanity observed by Riddoch [3] was not observed in this series. These soldiers assumed that the sensations were normal and in most instances referred to them as "phantom limbs," having been educated by the hospital personnel and by other patients. The acceptance of one another's injury and their acceptance by the people in the ward and in the local community has much to do with their good morale. The uncertainties are of the future, where they anticipate and fear stares, curiosity and sympathy by the home folks and difficulty in occupational adjustment.

There is a tendency for patients who lose their legs to feel that the arm amputees are more fortunate, and the reverse is true. Many are doubtful of their ability to return to previous menial tasks because of the fatigue that accompanies prolonged activity with a prosthesis.

The individual's previous adjustment seems to be of great importance in determining the adaptation to the injury:

Patient X, a leg amputee, had been a successful cattleman prior to service. On return from his first furlough he told of having ridden horseback over his ranch, bought several hundred

3. Riddoch, George: Phantom Limbs and Body Shape, Brain **64**: 197 (Dec.) 1941.

TABLE 13.—*Type of Amputation Affecting Occupational Adjustment*

	Total Number of Patients	With Change		With No Change		Uncertain	
		No.	%	No.	%	No.	%
Battle casualties							
Upper	23	7	30	7	30	9	40
Lower	48	31	65	8	17	9	18
Double	5	4	80	0	0	1	20
Total	76	42	55	15	20	19	25
Nonbattle casualties							
Upper	9	3	33	2	22	4	45
Lower	14	8	58	4	21	2	21
Double	1	1	100	0	0	0	0
Total	24	12	50	6	25	6	25
Total	100	54	54	21	21	25	25

TABLE 11.—*Age Factor in Social Adjustment*

	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	Total
Battle casualties									
Number of patients at age	10	21	21	10	5	5	4	0	76
Change									
Number	5	8	8	4	2	2	1	0	30
Per cent	50	38	38	40	40	40	25	0	39
No change									
Number	5	13	13	6	3	3	3	0	46
Per cent	50	62	62	60	60	60	75	0	61
Nonbattle casualties									
Number of patients at age	5	7	1	6	2	1	1	1	24
Change									
Number	4	4	0	0	2	0	0	0	10
Per cent	80	57	0	0	100	0	0	0	42
No change									
Number	1	3	1	6	0	1	1	1	14
Per cent	20	43	100	100	0	100	100	100	58
Total casualties									
Total patients at age	15	28	22	16	7	6	5	1	100
Change									
Number	9	12	8	4	4	2	1	0	40
Per cent	60	43	37	25	57	33	20	0	40
No change									
Number	6	16	14	12	3	4	4	1	60
Per cent	40	57	63	75	43	67	80	100	60

TABLE 12.—*Marital Status in Social Adjustment*

	Total Number of Patients	Number with Change	Per Cent with Change	Number with No Change	Per Cent with No Change
Battle casualties					
Married	28	8	28	20	72
Unmarried	48	22	44	26	56
Total	76	30	39	46	61
Nonbattle casualties					
Married	14	6	42	8	58
Unmarried	10	4	40	6	60
Total	24	10	41	14	59
Total	100	40	40	60	60

head of cattle and of straightening out his business affairs. He wasn't sure he could ride a horse with a prosthesis but he had demonstrated he could ride well without it and was not much concerned about the future.

Patient X had been a successful business man but owing to marital problems he gave up his work and became a heavy drinker. He enlisted to "cure" himself of his drinking. After his return home, as a casualty, he and his wife became reconciled and he had plans to work at a good job for another company. While he was still in the hospital the marital problem flared up and the patient is again drinking heavily.

show more reaction than the older men, and the single more trouble in social adjustment [4] than the married men. Forty per cent of the patients had some notable difficulty in social adjustment (tables 10, 11 and 12).

About one half of these soldiers plan a change in occupation because of the injury (tables 13 and 14). The double amputation and lower limb amputation patients have a greater tendency to plan changes in occupation than those who have lost an upper extremity. Most give rapid tiring and inability to be on their feet

TABLE 14.—*Age Factor in Occupational Adjustment*

	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	Total
Battle casualties									
Total	15	28	22	16	7	6	5	1	100
Number of patients at age	10	21	21	10	5	5	4	0	76
Change									
Number	7	10	11	6	3	3	2	0	42
Per cent	70	48	53	60	60	60	50	0	55
No change									
Number	1	4	6	3	0	1	0	0	15
Per cent	10	19	28	30	0	10	0	0	20
Uncertain									
Number	2	7	4	1	2	1	2	0	19
Per cent	20	33	19	10	40	10	50	0	25
Nonbattle casualties									
Number of patients at age	5	7	1	6	2	1	1	1	24
Change									
Number	2	4	1	2	1	0	1	1	12
Per cent	40	57	100	33	50	0	50	50	50
No change									
Number	1	1	0	3	1	0	0	0	6
Per cent	20	14	0	50	50	0	0	0	25
Uncertain									
Number	2	2	0	1	0	1	0	0	6
Per cent	40	29	0	17	0	50	0	0	25

TABLE 15.—*Age Factor as Affecting Sex Adjustment in Amputees*

	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	Total
Battle casualties									
Number of patients at age	10	21	21	10	5	5	4	0	76
Well adjusted									
Number	3	15	12	9	3	4	3	0	49
Per cent	30	72	57	90	60	80	75	0	64
Conflict or poorly adjusted									
Number	5	6	8	1	2	1	1	0	24
Per cent	50	28	38	10	40	20	25	0	32
No contacts									
Number	2	0	1	0	0	0	0	0	3
Per cent	20	0	5	0	0	0	0	0	4
Nonbattle casualties									
Number of patients at age	5	7	1	6	2	1	1	1	24
Well adjusted									
Number	4	5	1	4	1	1	1	0	17
Per cent	80	72	100	67	50	100	100	0	70
Conflict or poorly adjusted									
Number	1	2	0	2	0	0	0	1	6
Per cent	20	28	0	33	0	0	0	100	25
No contacts									
Number	0	0	0	0	1	0	0	0	1
Per cent	0	0	0	0	50	0	0	0	5
Total casualties									
Total number of patients	15	28	22	16	7	6	5	1	100
Well adjusted									
Number	7	20	13	13	4	5	4	0	66
Per cent	47	72	59	81	57	83	80	0	66
Conflict or poorly adjusted									
Number	6	8	8	3	2	1	1	1	30
Per cent	40	28	36	19	28	17	20	100	30
No contacts									
Number	2	0	1	0	1	0	0	0	4
Per cent	13	0	5	0	15	0	0	0	4

We have attempted to group the reactions to injury in several categories in an effort to explain some of these observations. These categories are represented in tables 10 to 26.

The patients with amputations involving the lower extremities had more difficulty in readjusting to social life with their families, fellows and others than those with upper extremity loss. This is contrary to the report of McKeever and our own expectations, because leg prostheses are less disfiguring and produce less occupational difficulty. In general the younger group

for long at a time as the reason for the planned change. Many have rather ambitious plans; for example, a butcher planned to go into personnel work on the basis that his prewar handling of female customers qualified him for this type of work. The younger group, not well established in a job prior to induction, planned a change in occupation in greatest proportion.

4. The term "social adjustment" in this paper is used to designate embarrassment in front of family and friends, reluctance to attend social functions and difficulty in adjusting to fellow soldiers or to physicians and nurses.

The factor of sexual adjustment in relation to the injury is a complex one (tables 15 and 16). We feel that this phase requires longer and more detailed investigation. Deutsch [5] has made observations on surgical patients that may have an important bearing on these patients. The Rorschach picture shows definite signs of sex conflict in 81 per cent of these patients (table 7). Clinically only 30 per cent admit any great concern over the sex function. The married group tend to have less concern than the single soldiers. About one fourth of the single battle casualty group have definite plans to marry, usually immediately after discharge.

TABLE 16.—*Sexual Adjustment in Amputees and Marital Status*

Marital Status on Date of Injury	Married Prior	Married After	Divorced Prior	Plans to Marry: Single	Plans to Marry: Married	Total
Battle casualties						
Well adjusted	22	4	3	15	5	49
Conflict or poorly adjusted	3	1	2	15	3	24
No contacts	0	0	0	2	1	3
Nonbattle casualties						
Well adjusted	10	1	0	5	1	17
Conflict or poorly adjusted	3	0	0	1	1	5
No contacts	..	..	..	1	..	1
Total casualties						
Number of patients	37	7	5	39	12	100
Well adjusted	31	6	3	19	6	66
Conflict or poorly adjusted	6	1	2	17	4	30
No contacts	0	0	0	3	1	4

Personality change [6] of some definite degree occurred in 62 per cent of the patients (tables 17, 18 and 19). The battle casualties with lower extremity loss show a greater incidence of personality change than those with arm amputation, yet in the accident cases the reverse relationship is found. Double injuries show the highest incidence of change in both groups. In general the older patients show a greater tendency to personality alteration than the younger group, but the trend is not pronounced. Marital status has an inconstant relationship to personality change in this group.

Anxiety is a common symptom, as shown in both Rorschach (67 per cent) and clinical studies (65 per cent) (table 20). The anxiety reaction is slightly more common in the intermediate than in the immediate stages of the patients reaction.

Neuropsychiatric traits [7] other than the aforementioned occur in about 64 per cent of the patients (tables 21 and 22).

Increased use of alcohol is admitted in 11 per cent of the patients (table 23). The increase is greatest in the single patients and tends to be greater in the older age group.

Thirty-eight per cent of the battle casualty patients and 20 per cent of the nonbattle casualty cases admit of increased religious feelings (table 24).

TABLE 17.—*Age Factor in Personality Changes*

	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	Total
Battle casualties									
Total	15	28	22	16	7	6	5	1	100
At age	10	21	21	10	5	5	4	0	76
Change									
Number	6	14	13	6	4	4	3	0	50
Per cent	60	67	62	60	80	80	75	0	61
No change									
Number	4	7	8	4	1	1	1	0	26
Per cent	40	33	38	40	20	20	25	0	39
Nonbattle casualties									
At age	5	7	1	6	2	1	1	1	24
Change									
Number	3	4	0	3	0	0	1	1	12
Per cent	60	57	0	50	0	0	100	100	50
No change									
Number	2	3	1	3	2	1	0	0	12
Per cent	40	43	100	50	100	100	0	0	50

TABLE 18.—*Type of Amputation as Affecting Personality Changes*

	Total Number of Patients	Number with Change	Per Cent with Change	Number with No Change	Per Cent with No Change
Battle casualties					
Upper	23	13	52	10	48
Lower	48	32	67	16	33
Double	5	5	100	0	0
Total	76	50	61	26	39
Nonbattle casualties					
Upper	9	6	67	3	33
Lower	14	5	36	9	64
Double	1	1	100	0	0
Total	24	12	50	12	50
Total	100	62	62	38	38

Absence without official leave offenses (table 25) are less common in all groups after injury than before. This is in part due to decreased mobility but mostly due to the high morale of the ward and the liberal furlough policy toward patients in condition to go on leave.

TABLE 19.—*Marital Status Factor in Personality Changes*

	Total Number of Patients	Number Changed	Per Cent Changed	Number with No Change	Per Cent with No Change
Battle casualties					
Married	28	19	67	9	33
Unmarried	48	31	65	17	35
Total	76	50	61	26	39
Nonbattle casualties					
Married	14	9	64	5	36
Unmarried	10	3	30	7	70
Total	24	12	50	12	50
Total	100	62	62	38	38

Accident habit was not encountered in these military patients (table 26). Five (6 per cent) of the battle casualties and 1 (4 per cent) of the nonbattle casualties had accidents of some type earlier in their life. This

5. Deutsch, Helene: Some Psychoanalytic Observations in Surgery, Psychosom. Med. 4:105 (Jan.) 1942.

6. "Personality change" in this paper is used to describe changes in habits and general behavior or changes in fundamental attitudes toward the world in general, the family or the Army.

7. "Neuropsychiatric traits" in this paper is used to describe pronounced irritability, sleep walking, battle dreams and so forth (table 22) which persist more than thirty days.

is much below the incidence in the fracture series reported by Dunbar,[8] in which patients in the age group 25-34 years had an incidence of previous injuries of 68 per cent.

No correlation could be made between either educational status or length of military service and the reaction to the injury.

The late reaction comes when these patients return to their homes and attempt to resume their normal place in life. We have formulated plans for following these patients after they leave the hospital. This will depend on the patients' voluntary cooperation, but we hope to be successful in this project. We have had the opportunity to discuss the reaction to amputation with two men injured in World War I. These two men have double amputations, one of the lower extremities and the other of an upper extremity. The National Office of the American Legion has them visiting the various amputee centers as morale builders and to demonstrate what can be done with their prostheses. We frequently see these men and find that they are a big factor in the morale of our patients. During the entire period since their injuries they have both had phantom sensations with cramps, aching and so forth, but they regard them as annoying physiologic experiences and not as evidence of invalidism or disability.

The correlation between the present reaction and the type of adjustment in the future should be the most valuable portion of the study.

TABLE 22.—*Neuropsychiatric Symptoms*

	Before		After	
	Battle Casualties	Nonbattle Casualties	Battle Casualties	Nonbattle Casualties
Floaters	1	..	..	..
Alcoholism, heavy	8	1	1	..
Sex	1	..	2	..
"Nervous"	2	3	2	1
Fights	1	..	..	..
Constitutional psychopathic state	1	2	..	..
Claustrophobia	1	..	..	..
Mother attachment	2	..	..	..
Run away	3	..	..	..
Sleep talking	1	..	..	..
Sleep walking	1	1	..	..
Nomads	..	1	..	..
Wall-flower	1	..	..	..
Battle dreams	..	..	13	..
Other frightful dreams	..	..	..	5
Paranoid	..	..	1	1
Fears civilian life	..	..	3	..
Insomnia	..	..	3	1
Anxiety	..	..	23	8
Nail biting	..	1	2	1
Bitter	..	..	4	3
Irritability	..	..	3	..
Depression	..	3	7	6
Noise conscious	..	..	1	..
Shame	..	..	1	2
Miscellaneous	1	1	10	2
Psychotic	..	..	..	1

TABLE 20.—*Anxiety in Amputees*

	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	Total
Battle casualties									
Total number of patients	15	28	22	16	7	6	5	1	100
At age	10	21	21	10	5	5	4	0	76
Immediate anxiety									
Number	3	10	3	5	4	5	2	0	32
Per cent	30	47	14	50	80	100	50	0	42
Present anxiety									
Number	6	15	11	4	5	4	3	0	48
Per cent	60	71	52	40	100	80	75	0	63
Nonbattle casualties									
At age	5	7	1	6	2	1	1	1	24
Immediate anxiety									
Number	3	6	0	2	2	1	0	1	15
Per cent	60	85	0	33	100	100	0	100	62
Present anxiety									
Number	4	6	0	3	2	1	0	1	17
Per cent	80	85	0	50	100	100	0	100	70

TABLE 21.—*Psychiatric Conditions Before and After Injury as to Type of Injury*

Type of Amputation	Number of Patients in Study	Number of Patients Showing Conditions Before Injury	Number of Patients Showing Conditions After Injury
Battle casualties			
Upper	23	6	12
Lower	48	16	30
Double	5	1	1
Nonbattle casualties			
Upper	9	3	8
Lower	14	7	12
Double	1	1	1
Total casualties			
Upper	32	9	20
Lower	62	23	42
Double	6	2	2
Total	100	34	64

COMMENT

The most striking feature of the present study is the high incidence of psychopathologic conditions in a group of persons who seem well adjusted to their immediate environment. The environment to which they are adjusting has certain features that probably aid in this adjustment, and these features should be adequately substituted in the home after discharge. One element of the hospital environment is the acceptance of the patient as an ordinary person and not as an invalid, a hero or an object of pity. The nurses, physicians, fellow patients and even the people in the nearby city have become so accustomed to men lacking one or more extremities that the patients are looked on as other average citizens. This fact gives them great reassurance on their leave from the ward and should be a valuable tip to their families and the projected reception committees in their home town. Conn [9] has discussed this phase of the problem very well and mentions the "War 'Amps' of Canada" organization as an effective mental hygiene measure.

A second feature is the attitude of optimism prevalent among the ward personnel and the patients. The occupational training and physical therapy departments do much to foster this attitude. The patients have a ten-

8. Dunbar, Flanders: Psychosomatic Diagnosis, New York, Paul B. Hoeber, Inc.

9. Conn, H. R., in discussion on Symposium on Amputations, J. Bone & Joint Surg. **26**: 670 (Oct.) 1944.

dency to set their occupational goals a little high, but the majority accept guidance in the choice of training and work hard at mastering the various technics.

The importance of a stable wife, sweetheart or mother is enormous. Those who visit them and show the normally expected excitement at the reunion and accept the injury as an unfortunate but unimportant incident give a tremendous boost to their morale. The dramatizers, the weepers and the rejecters add further burdens to the soldier who should be protected from such foolish behavior.

Another important feature in the hospital environment is the group morale or social pressure toward attainment of a useful productive role in life. This works subtly but powerfully. For example, only 1 patient in this series had phantom pain. Many entered the ward complaining bitterly of pain, demanding care from the nurses, asking for "hypos" and in general behaving in the same manner as our civilian compensation cases of phantom pain. Within a day or two these requests and complaints disappear. Neither physician nor nurse has said anything, but his fellows have. A day or so of group disapproval, often bluntly expressed, plus the varied constructive activities of the other patients seem to allay the pain and reorient the person toward his problem. It is realized that this particular brand of psychotherapy is not available outside the amputation section of the hospital, but it indicates that families and family physicians should ignore complaints and encourage constructive activity even though they are considered unsympathetic.

It is our opinion that most of these persons can and will adjust well in the communities after discharge if the community can meet their needs. These needs would seem to be a chance to work productively, marry and be accepted as an ordinary human being. We believe that an opportunity for a discussion of their problems with a competent psychiatrist would aid all patients with amputation to a better and more complete adjustment. This psychiatric aid should be available both in the hospital and after they return home.

TABLE 24.—*Change of Attitude Toward Religion in Amputees*

	Battle Casualties	Nonbattle Casualties	Total
Total number of patients	76	24	100
Number with increased religious feelings	29	5	34
Per cent of patients with increased religious feelings	38	20	34

TABLE 25.—*Frequency Factor of Absence Without Official Leave in Amputees*

A. W. O. L. prior to injury	14%
A. W. O. L. after injury	3%
Total cases, 100	

TABLE 26.—*Previous Accidents*

	Number of Patients	Previous Accidents	
		Number	Per Cent
Battle casualties	76	5	6
Nonbattle casualties	24	1	4
Total previous accidents		6	

TABLE 23.—*Alcoholism in Amputees as to Type of Amputation*

Amount of Drinking Prior to injury	Heavy Drinker				Temperate Drinker				Abstinent			Total Number of Patients in Study
After injury	More	Less	No Change	Abstinent	More	Less	No Change	Abstinent	Heavy	Temperate	No Change	
Battle casualties												
Upper limb	..	..	..	..	..	5	15	1	..	1*	1	23
Lower limb	..	1	7	1	5	2	19	5	3	..	6	48
Double	..	1	..	..	1	..	3	..	..	..	..	5
Total	..	2	7	1	6	7	37	6	3	1*	7	76
Nonbattle casualties												
Upper limb	..	2	1	..	..	..	3	..	..	..	2	9
Lower limb	..	1	3	..	1	1	7	..	..	..	1	14
Double	..	1	..	..	..	..	..	..	..	..	..	1
Total	..	4	4	..	1	1	10	..	..	..	3	24
Total casualties												
Upper limb	..	2	1	..	..	5	18	1	..	1*	3	32
Lower limb	..	2	10	1	6	3	26	5	3	..	7	62
Double	..	2	..	..	1	..	3	..	..	..	..	6
Total	..	6	11	1	7	8	47	6	3	1*	10	100

* Reformed four years prior to injury.

SUMMARY

The reaction to the loss of one or more limbs has been studied in 100 soldiers who are considered normal. Seventy-six of these men were injured in battle and 24 in accidents.

Lower limb amputations predominate.

The average age of these patients is 26.7 years.

They are all well trained and experienced soldiers.

In general those with upper extremity injuries, married men and older men have less trouble in social adjustment to amputation.

More than 50 per cent plan some change in occupation as a result of the injury. The planned changes are more common in younger troops and in troops with lower extremity loss.

There is considerable difficulty in sexual adjustment. This phase of the problem is to be investigated further.

Signs of psychopathology in terms of personality change, anxiety, emotional instability, battle dreams and alcoholism occur in a surprising percentage of these men.

Phantom sensations of some type occur in 95 per cent of these patients.

An increased religious feeling is common in the two groups of patients but is more frequent in the battle casualties (38 per cent) than in the nonbattle casualties (20 per cent).

A history of previous accident is not common in these cases.

PENICILLIN IN NEUROSYPHILIS

EFFECT ON BLOOD AND SPINAL FLUID

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PHILADELPHIA

In cases of neurosyphilis the response of the spinal fluid and blood are important objective criteria. Herein are summarized the observations on blood and spinal fluid of 89 cases of neurosyphilis treated from November 1943 to October 1944. This study continues work previously reported[1] but is confined to cases treated at the University of Pennsylvania.

TABLE 1.—*Effect of Penicillin in Neurosyphilis*

Results in per Cent

		Became Normal	Total Improved	Unchanged	Worse
First course, 89 cases	Spinal fluid	12	72	18	10
	Blood	8	27	70	3
Second course, 29 cases	Spinal fluid	24	41	52	7
	Blood	0	7	83	10

Repeated examination, usually at two month intervals, were made of symptoms and signs and of the blood and spinal fluids. Cell counts were made immediately on fluid withdrawal; total protein was determined by the sulfosalicylic acid method of Kingsbury Clark. Kolmer quantitative Wassermann tests and colloidal mastic tests were run. The serologic tests on the blood were examined by a uniform series of technics, Kolmer, Eagle and Kline; for this report only the Kline quantitative titer results were used.

Sodium penicillin in aqueous solution was given intramuscularly for eight days, every four or three hours, for a total dose of 1.2 or 2.4 million Oxford units; a few received 3.0 or 4.0 million units. There was no intentional uniformity of lot or manufacturer. No other treatment which could influence the results was given.

The work described in this paper was done under contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the University of Pennsylvania (OEMcmr-403).

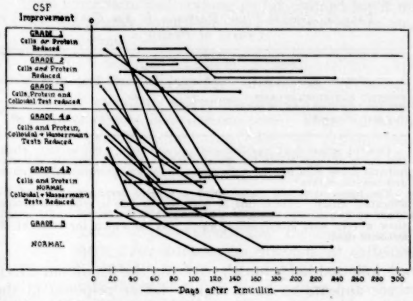
All material of this report is based on contributions from the Hospital of the University of Pennsylvania, Philadelphia General Hospital, Pennsylvania Hospital, Children's Hospital of Philadelphia and individual special departments constituting a penicillin panel.

From the Institute for the Control of Syphilis, University of Pennsylvania, United States Public Health Service cooperating. Neurologic work supported in part by the Kirby-McCarthy Fund.

1. Stokes, J. H.; Sternberg, T. H.; Schwartz, W. H.; Mahoney, J. F.; Moore, J. E., and Wood, W. B., Jr.: The Action of Penicillin in Late Syphilis, J. A. M. A. **126:** 73-79 (Sept. 9) 1944. Gammon, G. D.; Stokes, J. H.; Lentz, J. W.; Steele, W. H.; Rose, E. K.; Scott, J.; Scott, D. M., Jr., and Ornsteen, A. M.: The Immediate and Early Effects of Penicillin on Syphilis of the Central Nervous System, Tr. Am. Neurol. A. **70:** 65-69, 1944. Stokes, J. H.; Beerman, H.; Ingraham, N. R., Jr.; Lentz, J. W.; Morgan, H. G.; Gammon, G. D.; Steele, W.; Rose, E. K., and Gyorgy, P.: Penicillin in Late Syphilis: An Interim Report, Am. J. Syph., Gonor. & Ven. Dis. **29:** 313 (May) 1945.

RESULTS

Penicillin improves the spinal fluid in all its elements and to a lesser degree the blood serologic tests (table 1). The effect on spinal fluid cells and protein is greatest; only 6 of the whole group failed to become normal in respect to these items.


CSF Improvement
GRADE 1 Cells or Protein Reduced
GRADE 2 Cells and Protein Reduced
GRADE 3 Cells Protein and Colloidal Test reduced
GRADE 4a Cells and Protein, Colloidal + Wassermann Tests Reduced.
GRADE 4b Cells and Protein Normal, Colloidal + Wassermann Tests Reduced
GRADE 5 NORMAL
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Days after Penicillin

Improvement in cerebrospinal fluid (grades 2 and 3) under penicillin. Results of one course of penicillin. All fluids were, before treatment, grade 2 or 3 in the usual classification. Dots indicate the time of observation and are connected by lines to indicate the curve of the individual case. The improvement begins promptly and continues up to about one hundred and twenty days. The apparent exceptions occur in those cases in which infrequent observations were made. The degree of improvement is considerable in most cases. Retreatment accounts for the short time some of the cases were followed.

Tabetic cases show the least improvement in blood and spinal fluid of the various types of neurosyphilis (table 2). The reason probably lies in the fact that the more abnormal spinal fluids show the greatest improvement, as shown in table 3; the character of the fluid rather than the clinical type of the case appears to determine the response.

In judging the effect of treatment it is important to learn the time course of the change and particularly how long after a treatment session the improvement continues. As shown in the chart, the spinal fluid change begins a few days after penicillin is started and continues up to four months, after which very little further alteration can be seen. To observe the full effect, therefore, the case must be followed at least one hundred and twenty days.

TABLE 2.—*Response of Spinal Fluid of Various Types of Neurosyphilis to One Course of Penicillin*

Type of Neurosyphilis	Cases	Spinal Fluid Response in per Cent: To Normal	Improved	Total Improved	Total Unimproved	Unchanged	Worse	Normal Unchanged
Total.....	89	12	60	72	21	18	10	7
Dementia paralytica.	17	0	88	88	12	6	6	0
Tabes.....	32	16	43	59	32	25	16	9
Meningovascular...	23	19	57	76	19	19	5	5
Asymptomatic.....	11	15	62	77	23	8	15	0
Congenital	6	17	50	67	0	33	0	33

The table shows that the fluids of tabetic patients are least affected by penicillin.

The column Total Unimproved is the sum of columns Unchanged and Worse less column Normal, Unchanged. The sum of columns Total Improved, Total Unimproved and Normal Unchanged equals 100. Column Unchanged includes Normal Unchanged group; therefore the sum of Total Improved, Unchanged and Worse equals 100.

Two dosage levels were used: a low dose of 1.2 million units and a high dose of 2.4 million; a few patients were given 3.0 and 4.0 million units. Comparison of the results in these two groups appears to show no difference between them (table 4). But if the time element is taken into account, that is, if the cases

TABLE 3.—*Spinal Fluid Response in per Cent to One Course of Penicillin*

Control Spinal Fluid	Became Normal	Total Improved	Unchanged	Worse
Severely abnormal, 56 cases.....	13	93	2	5
Moderately abnormal, 23 cases....	17	51	40	9
Normal, 10 cases.....	..	..	60	40

Control spinal fluid signifies pretreatment fluid. The severely abnormal fluids are grade 3 in the usual classification. Moderately abnormal includes fluids with normal cells and protein but abnormal Wassermann and mastic curves.

The more abnormal fluids show a greater response than the less abnormal fluids. This is due in part to the fall in cells and protein, which almost always improve. Normal cases becoming worse usually show a very mild abnormality, which may be within the error of the methods used.

are followed long enough to obtain the maximum effect, there appears to be a slightly better response in the higher dosage group (table 5). In this table patients given one course only at low and at high dosage are compared with the final result in patients given a high dose administered in two courses, in other words, retreated. From the last three columns of the table it can be seen that better results are obtained from a high dose than a low one, and the best results from a high dose given in two courses as retreatment. In the latter, the effect of time is operative as well as dosage. It therefore appears that giving the high dose over a longer time is more effectual than administering it in a single short course. Although when tested by the chi square there is not a significant difference between these groups, the trend to the foregoing conclusion is clear.[2]

In view of these considerations and in order to judge the effect of time or length of treatment as well as the dosage levels, it is believed desirable to plan further treatment of neurosyphilis along these lines: Total

TABLE 4.—*Comparison of Effect of Various Amounts of Penicillin on Spinal Fluid and Blood (in Parentheses), One Course*

Results in per Cent

Million Units	Cases	To Normal	Total Improved	Unchanged	Worse	Control Normal No Change
1.2	54	13 (9)	68 (28)	19 (61)	9 (2)	4 (9)
2.4	22					
3.0	7	8	72	6	11	11
4.0	6	(6)	(24)	(47)	(6)	(23)
	35					

No significant difference between the results of a low dose of 1.2 million units and a high dose can be seen. This table differs from table 5 in that the length of time after treatment is not considered.

dosage should be kept constant; it should be administered (1) as a single course and (2) split into two courses, the second given (*a*) at the end of the first course and (*b*) later, probably at the time when the results of the first have leveled off, at one hundred and twenty days.

Considering the data now available, we are increasing the total dose to 4.8 million units; this may be given in a single course of eight days and split into 2.4 million units administered in two courses at different times, as described.

The observation period over which these cases were followed is, in days, less than thirty, 1 per cent; thirty to sixty, 5 per cent; sixty to one hundred, 12 per cent; one hundred to two hundred, 31 per cent; two hundred to three hundred, 35 per cent; three hundred to four hundred, 14 per cent; to four hundred and eighty-three, 1 per cent.

SUMMARY

Penicillin shows a clear effect on the blood serologic reactions in neurosyphilis and an even greater effect on the elements of the spinal fluid. Fluids showing the greatest abnormality improve most. The improvement apparently continues for as long as four months after an eight day course.

Both dosage and length of treatment are important in the result. Within the amounts of sodium penicillin employed in this study, a larger dose is better than a smaller and the best results are obtained when the larger dose is given in two courses; that is, when the length of treatment is increased. In view of the history of other forms of treatment for syphilis, this might have been expected.

TABLE 5.—*Effect of Various Dosages of Penicillin on Spinal Fluid*

Dose in Million Units	Cases	Normal	Improved	Unimproved
One course, 1.2; 2.4; 3.0; 4.0....	41	22	80	20
One course, 1.2.....	24	21	75	25
One course, 2.4; 3.0; 4.0.....	17	24	88	12
Two courses, 2.4; 3.0; 4.0.....	29	31	92	8

The time of each course was the same, eight days. One course signifies no further treatment; all of these were followed one hundred and twenty days or more, which is long enough to observe the maximum change (as shown in the chart). Fluids normal before and unchanged during treatment are deleted.

A better result is obtained from a high dose than from a low dose, and the best result from a high dose given in two parts. Increasing the length of treatment as well as the dose improves the results.

First Great Name in American Science.—Though his career as a printer, publisher, almanac keeper, diplomat, statesman, signer of the Declaration of Independence and member of the Constitutional Convention—not to mention his exploit with the kite, the key and the lightning bolt—are well known, too few, perhaps, appreciate that "Poor Richard," Benjamin Franklin, is the first great name in American science. Among his significant scientific contributions, most of which preceded his diplomatic days, can be named invention of the "Franklin stove" and bifocal spectacles; founding of hospitals, libraries and the first American scientific society, the American Philosophical Society (1743); improvement in public works, such as street lighting and postal systems; description of lead poisoning, an industrial disease of the print shop; and experiments in electricity. Franklin's famous kite experiment, performed in June 1752 in Philadelphia, was undertaken to prove that lightning, fashioned in the skies of the gods of the weather, was the same stuff that men were making on earth with their newly invented "static electricity machines" and storing in "Mr. Muschenbroek's wonderful bottle," the foil lined Leyden jar out of Holland. Franklin had completely investigated this "shocking instrument" a year or two after its invention (1745) and had concluded that there were two kinds of electricity, which he named positive and negative. Franklin was not the only founding father of the Republic who was interested in science. When Thomas Jefferson (1743-1826), author of the Declaration of Independence, rode horseback to his inauguration as third President of the United States in 1801, he carried in his saddlebags specimens of fossil bones on which to lecture before the American Philosophical Society.—The Autobiography of Science, edited by Forest Ray Moulton and Justus J. Schifferes, New York, Doubleday, Doran & Co., Inc., 1945.

2. Dr. Harold Austin gave advice on statistical matters in the study.

THE USE OF DRUGS IN RESUSCITATION FROM ELECTRIC SHOCK

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For many years I have encountered the apparently irresistible compulsion of doctors to give some sort of hypodermic injection to patients overcome by carbon monoxide, close to death from submersion, or in desperate straits from electric shock. At one time in a long experience I listed, as well as the records permitted, the different drugs given in carbon monoxide emergencies by ambulance physicians in New York. Nothing in the traditional teaching of medical students was left out.

This is not such a reflection on these young doctors and their training as may be thought. The drugs injected can be shown to stimulate breathing but not in the dosage or under the circumstances which are of consequence in the emergencies in which we are interested.

Let us consider an instance of electric shock in which the victim, who is obviously unable to breathe and whose heart and circulation may or may not be operating, is being given artificial respiration. The questions which arise at such a juncture are whether any drug can be administered which will at once improve the chances for reviving the breathing or aid the condition of the circulation.

STIMULANTS TO BREATHING

The following drugs can be shown by animal experimentation to stimulate breathing. I shall list what they do and where they fail. All the drugs can be given intravenously or under the skin by injection.

1. *Strychnine Sulfate.*—This alkaloid has a stimulating action on the spinal cord, on the medulla containing the respiratory center and on the brain. But in dosage of nonpoisonous size, strychnine has no appreciable effect on breathing and, when given in sufficient amount to stimulate breathing momentarily, the drug is eventually depressing to respiration and thus adds to, rather than remedies, the condition of the patient. The fact is that all medical men have so wholesome a respect for strychnine as a poison that such injections as are frequently given are so small as to be both ineffectual and harmless.

2. *Picrotoxin.*—This drug is a strong stimulant to the nervous system, particularly the lower brain and medulla, where respiration originates.

Again, however, it has been shown that when enough picrotoxin is injected to stimulate breathing convulsions result.

Picrotoxin, used carefully, under hospital conditions has proved useful in combating poisoning due to the barbiturates (veronal and other barbituric acid derivatives) but has no place in emergency failure of breathing from electric shock.

3. *Metrazol.*—This drug is related to camphor and has had extensive use in the treatment of certain sorts of insanity by the production of generalized convulsions. This means it is a strong stimulant of the nervous system, but it has no conspicuous effect on breathing and has no value in respiratory failure from electric shock.

4. *Nikethamide* (Coramine).—This is a relatively new drug and has some promise as a stimulant of a depressed breathing center. This value is, however, very uncertain, and nothing so far claimed for it makes the compound worth serious consideration in electric shock therapy.

5. *Caffeine and Sodium Benzoate.*—This caffeine compound is suitable for intravenous injection, and caffeine even in enormous dosage seems devoid of harmful effects of a serious sort. There is no doubt of the general stimulating effect of caffeine on the central nervous system, the breathing center included. I think it fair to describe the action as a sort of oiling of staggering nerve machinery. It thus makes normal processes in the breathing center go on more readily, and I know of no evidence that the drug can or has done harm. An intravenous injection of caffeine and sodium benzoate is not out of place in any sort of respiratory depression, but the injection must be made directly into the blood by vein and not be a simple hypodermic (under the skin), since prompt action is imperative.

6. *Alpha Lobeline.*—This drug had popularity as a respiratory stimulant about ten years ago and, fortunately, has dropped out of use, owing to its very capricious effect as a stimulant to breathing and its emphatically disadvantageous effects on the heart and circulation.

SUMMARY

At the present time there is no substance which can be given by injection which benefits the breathing significantly. Caffeine and sodium benzoate intravenously may be useful but has no specific potency.

In my opinion the Edison Institute might do well to consider financing research looking toward the discovery of some substance which will be of substantial aid to the respiratory center, much as does caffeine, but really efficient. I do not think any agency so completely dependent on the attendance of a physician, as is an intravenous injection, can be of primary consequence in resuscitation from electric shock, but year by year we have instances of artificial respiration carried out for minutes to even many hours with eventual recovery. It must be clear to every one that the most our crews trained in artificial respiration accomplish during their period of effort is to substitute artificial breathing for absent natural breathing. They merely give the patient a chance to recover by arresting asphyxia. I believe more than this could be done in the direction of finding some direct aid to the respiratory center and that in such a direction we shall see our greatest advances in the resuscitation of the most serious electric accidents.

STIMULANTS TO THE HEART AND CIRCULATION

The condition of the heart and the blood circulation as a result of electric shock is far better understood than was the case even a few years ago. Divested of all the medical description possible, it seems to me that the following circulatory derangements may be met:

1. The shock, by passing through the medulla, may have stopped the breathing and left the circulation of the blood somewhat impaired but not seriously so. This

From the Department of Physiology, Harvard School of Public Health. Read before the Committee on Safety of the American Institute of Electrical Engineers, New York, Jan. 23, 1945.

is the ideal case for resuscitation. But if four or five minutes of absent breathing intervene before artificial respiration is started, the heart and blood vessels will begin to show the effects of oxygen lack. Oxygen will remedy this condition, and no injection or treatment other than artificial respiration is required or advisable.

2. The medulla, in addition to the breathing center, contains in very small space the centers for regulating the heart rate, particularly for slowing the heart and for regulating the blood pressure by controlling the caliber of the smallest blood vessels. One may thus expect that a shock which stops breathing can readily affect nearby units concerned with the circulation. This occurs and, consequently, the situations resulting may be quite varied. Let me list a few of them:

(*a*) Breathing may be absent and the heart very slow and weak with low blood pressure.

(*b*) Breathing may be present, the heart slow and the blood pressure variable but becoming low.

(*c*) Breathing may be irregular with a tendency to stop, the heart slow, irregular and weak, and the blood pressure low.

Obviously, these possible situations may vary between themselves so that in each case the condition of the circulation can be appraised only by a competent physician. By "competence" I mean a man capable in cardiology and with at least some knowledge of the consequences of electric shock. Very few doctors meet this last mentioned requirement, and consequently the treatment given such patients is not, to say the least, discerning.

Artificial respiration for absent or inadequate breathing is, of course, essential, since lack of oxygen will make the condition of the circulation grow worse rapidly. If breathing is feeble and unreliable, oxygen-carbon dioxide inhalation is helpful. Absolute rest is imperative.

If the blood pressure continues to remain low and the heart feeble so that the patient begins to be in danger for circulatory inadequacy, the physician may consider giving an intravenous injection of a small dose of epinephrine or ephedrine. In either case the injection should be given very slowly and should be understood to be a last resort. Caffeine and sodium benzoate, discussed in the section on breathing, should have been given early in the management of the case and will benefit the circulation.

3. The shock by passing through the heart may cause ventricular fibrillation. The patient is dead white, not bluish. No pulse can be felt and after three or four breaths respiration ceases. Such patients are often given injections of epinephrine through the chest wall directly into the heart.

There is increasing evidence that ventricular fibrillation occurring spontaneously in man, though usually fatal, occasionally ceases with return of the heart to normal rhythmic beating. There is no reason to believe the same thing may not happen after electric shock, but such an event must be very rare.

There is no practical procedure which affects the fibrillating heart muscle, and an intracardiac injection of epinephrine can be relied on to do but one thing, namely make fibrillation worse, so that any chance of spontaneous shift to normal pulsation is lost.

Clinical Notes, Suggestions and New Instruments

SKIN GRAFTING IN HEMOPHILIA WITH A PREPARATION OF THROMBIN AND SULFANILAMIDE

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Operative procedures on patients with hemophilia are not often undertaken because of the high postoperative mortality. Excessive bleeding following such a simple operation as tooth extraction has been a common cause of death.[1] Recently the use of certain active thrombin preparations has made tooth extraction in hemophilia a relatively safe procedure.[2] To our knowledge skin grafting has not been attempted in hemophilia, largely because of the likelihood of uncontrolled bleeding from the donor site.

Fig. 1.—Recipient area before skin grafting.

The present report concerns a successful skin graft operation on a patient with hemophilia by means of a preparation of thrombin[3] and sulfanilamide[4] to control the bleeding from the donor site.

REPORT OF CASE

W. M., a white man aged 26, hemophilic, of Irish descent, was admitted for the fourteenth time on March 6, 1944.

His previous admissions had been for bleeding from a cut lip, from the buccal mucosa, for epistaxes, for hematomas, for bleeding from loss of "milk" teeth and from cuts on the right

From the Thorndike Memorial Laboratory, the Second and Fourth (Harvard) Medical Services, Boston City Hospital, and the Department of Medicine, Harvard Medical School.

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1. Birch, C. L.: Hemophilia: Clinical and Genetic Aspects, Urbana, Ill., University of Illinois Press, 1937.

2. Lozner, E. L.; MacDonald, H.; Finland, M., and Taylor, F. H. L.: The Use of Rabbit Thrombin as a Local Hemostatic, Am. J. M. Sc. **202**: 593 (Oct.) 1941.

3. Taylor, F. H. L.; Lozner, E. L., and Adams, M. A.: The Thrombic Activity of a Globulin Fraction Derived from Rabbit Plasma, Am. J. M. Sc. **202**: 585 (Oct.) 1941.

4. This material was made available through the courtesy of the Lederle Laboratories, Pearl River, N. Y.

knee. He also suffered, from the age of 2, from other episodes of abnormal bleeding, especially hemarthroses and attacks of hematuria. The coagulation time of his blood has been from one to one and one-half hours as measured by a modification [5] of the method of Lee and White.[6]

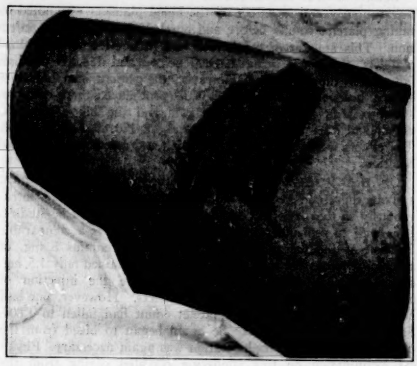

Fig. 2.—Donor site at operation after application of thrombin with sulfanilamide. Note absence of bleeding.

The patient's family history included one maternal uncle, one brother and one maternal first cousin and one second cousin with hemophilia.

Fig. 3.—Recipient area nine months after grafting. Complete healing.

The present bleeding episode began one month before admission following an abrasion and contusion of the right leg just distal to the anterior tibial tubercle. A transfusion of whole blood was given and a dry sterile dressing applied to the area. There was little subcutaneous hemorrhage. Healing was satisfactory, but the area was traumatized again three and one-half weeks later and became swollen, red and exquisitely tender. There was an area of cellulitis extending from the knee to the ankle, and swollen tender lymph nodes appeared in the right groin. His temperature was 102 F., the pulse rate 140. The following day the wound began discharging old blood and pus, and the patient was admitted to the hospital. Full doses of sulfadiazine orally were begun, and débridement of the gangrenous skin over the infected hematoma was carried out, care being taken not to incise normal skin. A considerable amount of pus and large blood clots were removed. A firm dressing of a sulfathiazole emulsion [7] was applied and subsequently changed infrequently. The patient became afrebrile on the fourth day and remained so thereafter. The cellulitis subsided and the wound began to granulate. Two weeks after admission, under pentothal anesthesia, a split thickness razor graft was taken from the lateral aspect of the left thigh and applied to the granulating area (fig. 1). The bleeding from the donor site was controlled instantly by applying a mixture of powdered sulfanilamide and thrombin to the area (fig. 2). Firm dry dressings were applied to both donor and recipient sites. There were no postoperative complications. The donor site healed uneventfully in nine days. The take of the graft was excellent (fig. 3).

5. Pohle, F. J., and Taylor, F. H. L.: The Coagulation Defect in Hemophilia: The Effect in Hemophilia of Intramuscular Administration of a Globulin Substance Derived from Normal Human Plasma, J. Clin. Investigation **16**: 741, 1937.

THROMBOCYTOPENIC PURPURA DUE TO MAPHARSEN (OXOPHENARSINE HYDROCHLORIDE U. S. P.)

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DETROIT

Blood dyscrasias such as thrombocytopenic purpura are uncommon complications of arsenotherapy for syphilis. It was nine years after the introduction of arsphenamine before Labbé and Langlois [1] called attention to the fact that purpuric manifestations might be a complication of this therapy for syphilis.

Loveman [2] was able to find reports of 14 instances of purpura hemorrhagica following arsphenamine therapy up to 1931 and added 1 case of his own. In 1942 Engelhardt,[3] in reporting a case of purpura hemorrhagica following neoarsphenamine, found 50 cases of thrombopenic purpura complicating arsphenamine therapy. Falconer and Epstein,[4] in discussing their observations on 8 cases of typical purpura following arsphenamine, have expressed the opinion that this toxic manifestation of arsphenamine therapy was relatively more frequent than reported and that the increased number of reported cases was probably due to a more widespread interest and alertness in recognition of complications due to arsphenamine therapy.

Neoarsphenamine, arsphenamine, sulfarsphenamine and bismarsen have been the arsenicals most frequently associated with this complication. Of this group neoarsphenamine has been by far the most often linked with this complication. However, one should not infer from this fact that neoarsphenamine is the most toxic of the arsenicals, since the latter drug up until recent times has been the most commonly employed of this group of arsenicals in antisyphilitic therapy. Mapharsen was introduced in 1936 for general use and has been used extensively since that time in the treatment of syphilis. Review

6. Lee, R. I., and White, P. D.: Clinical Study of the Coagulation of Blood, Am. J. M. Sc. **145**: 495, 1913.

7. Ackman, D., and Wilson, G.: Surgical and Gynecological Experiences with an Emulsion of Sulfathiazole, Canad. M. A. J. **46**: 209, 1942. This material was made available through the courtesy of Smith, Kline and French, Philadelphia.

From the Department of Medicine of Wayne University College of Medicine and City of Detroit Receiving Hospital.

1. Labbé, M., and Langlois, S.: Purpura hémorrhagique aigue par intoxication arsenicale, Bull. et mém. Soc. méd. d. hôp. de Paris **43**: 786 (July) 1919.

2. Loveman, A. B.: Toxic Granulocytopenic Purpura Hemorrhagica and Aplastic Anemia Following Arsphenamines, Ann. Int. Med. **5**: 1238-1256 (April) 1932.

3. Engelhardt, H. T., and Bruno, F. E.: Observations on a Case of Thrombopenic Purpura Following Administration of Arsenicals, Urol. & Cutan. Rev. **46**: 654-656 (Oct.) 1942.

4. Falconer, E. H., and Epstein, N. N.: Purpura Hemorrhagica Following Neoarsphenamine and Bismarsen Therapy, Arch. Int. Med. **65**: 1158-1177 (June) 1940.

of published reports fails to reveal a single instance of thrombopenic purpura complicating mapharsen therapy. However, Wintrobe [5] has recently stated that he has seen 3 instances of this complication due to the drug. It is our purpose in this paper to report a case of thrombopenic purpura complicating mapharsen therapy for syphilis.

REPORT OF CASE

A white man aged 24, admitted to Detroit Receiving Hospital Nov. 16, 1941 because of copious bleeding from his mouth and nose, on admission gave a history of a penile lesion in March 1941 followed by a generalized eruption a month later. His family physician found a positive serologic reaction and instituted antisyphilitic therapy on April 24. This consisted of 0.06 Gm. of mapharsen intravenously and a bismuth compound intramuscularly for thirty weeks without a rest period. The first seventeen injections were well tolerated. Shortly after each of the last thirteen injections he experienced transient severe headaches. However, there were no other untoward symptoms.

On November 14, two days before admission to the hospital, he received his thirtieth injection of mapharsen. This was soon followed by severe headache, nausea and vomiting. Later that day he began to bleed from the mouth and subsequently from the nose. Local measures were of no value in controlling the bleeding. The next day a purpuric eruption was noted over the lower extremities and at the same time he noted that he bruised very easily and ecchymotic areas appeared over the upper arms.

There was no history of allergic, familial or hereditary disease. No drugs other than bismuth compounds and mapharsen were taken during his course of antisyphilitic therapy. Although isolated reports have appeared implicating bismuth,[6] it seems unlikely that this was the offending drug in this case, since bismuth was reinstituted after his recovery without untoward effects.

Physical examination on admission revealed that the patient was well nourished and developed and was acutely ill. The blood pressure was 124/70 and his temperature was elevated to 101 F. There was a purpuric area in the right conjunctiva, and a few small flame shaped hemorrhages were seen in both fundi. The mouth was foul smelling, and over the soft palate and posterior pharynx there was a large ecchymotic area. The uvula was edematous and ecchymotic, and there were several blood filled blebs on the buccal mucous membranes. Although he had profuse epistaxis, no bleeding points were discernible. There was no adenopathy, and but for a soft systolic murmur at the apex the heart and lungs were normal. The liver edge was palpable at the right costal margin and the spleen descended 2 fingerbreadths below the left costal margin. Over both tibial areas of the legs there was a generalized purpuric eruption. The capillary fragility test at this time was strongly positive.

Shortly after admission a blood count revealed 11.5 Gm. of hemoglobin, 4,160,000 red blood cells and 9,300 white blood cells, with 95 per cent neutrophils and 9,320 platelets. The bleeding time was over fifteen minutes and the clotting time eleven minutes. There was no clot retraction in twenty-four hours. Urinalysis was negative; the Kline reaction was doubtful but the Kahn reaction negative.

He received a 500 cc. blood transfusion the day after admission, but he continued to bleed from the mouth and nose for another two days. Daily platelet counts during this time varied between 4,000 and 6,000 platelets. In addition there appeared a fall in hemoglobin and erythrocytes as the result of continued bleeding. From the fifth day after admission until he was discharged from the hospital the platelet count rose, with the subsidence of bleeding manifestations and disappearance of the purpuric eruption. The spleen decreased in size during this period, being barely palpable three weeks after admission. A bone marrow aspiration on November 25 was entirely normal; the megakaryocytes present appeared of normal structure, staining quality and number. The bleeding time returned to within normal limits nine days after admission, at which time the clot retraction was complete in two hours and the capillary fragility test was negative.

Before he was discharged he received 5 mg. of mapharsen intravenously and its effect on the blood platelets was noted by taking platelet counts before and one-half hour after the injection. This amount of mapharsen had little effect on the blood platelets, the count being 194,000 before and 154,000 one-half hour after the injection. However, the patient complained of severe headache shortly after this procedure, there was an accompanying increase in pulse rate and the blood pressure, which had on former occasions averaged 120/80, fell to 96/60. The effects were of only short duration and resembled a nitritoid reaction.

On Dec. 9, 1941 he returned to the outpatient department and at this time received 40 mg. of neoarsphenamine intravenously so that its effect on the thrombocytes might be studied. It is well to remember that although this dose is a comparable fraction of the therapeutic dose it actually contains 8 mg. of arsenic, whereas the mapharsen test dose contained only 1.5 mg. of arsenic. A platelet count done before the injection of neoarsphenamine revealed 184,000 platelets. However, one-half hour after the injection the platelet count had fallen to 1,800. Somewhat later in the day he again began to bleed from the nose and mouth and hospitalization was again necessary. Physical examination on this admission revealed oozing from the gums and nose and hemorrhagic herpetic lesions on the mucous membranes of the lips. There was some oozing from the site of the intravenous injection, and over the ankles and tibias a purpuric eruption again appeared. The day after admission no platelets were found on examination of the peripheral blood, bleeding time was again prolonged, there was no clot retraction in twenty-four hours and the capillary fragility test was positive. From this time until his discharge from the hospital three days later the platelets rapidly rose to normal levels, the oozing from the mucous membranes of the mouth and nose subsided and the purpuric eruption disappeared. Blood studies done on this admission revealed a slight posthemorrhagic anemia but no abnormalities of the leukocytes.

He was treated with weekly injections of bismuth following his discharge with no untoward effects. After five months there was a reversal of his serologic reaction to negative and he was subsequently inducted into the armed forces.

COMMENT

In view of this thrombopenic reaction to mapharsen it is interesting to note the work done by Falconer and Epstein.[7] They studied several cases of thrombopenic purpura that were due to sensitivity to neoarsphenamine and bismarsen and administered as much as 40 mg. of mapharsen without effects on the platelets and capillaries and without observing constitutional manifestations. These investigators thought that the quantity of arsenic may be an important factor for this phenomenon, since mapharsen contains less arsenic. This seems to be borne out, at least in this case. Although sensitization to neoarsphenamine had resulted from the long administration of mapharsen, the reaction to a therapeutically equivalent dose of neoarsphenamine was much greater than that following a test dose of mapharsen. It was also suggested by Falconer and Epstein in view of the lack of reaction to mapharsen in their neoarsphenamine sensitive cases that sensitivity may be due to some oxidation product not present in mapharsen. The latter thought, however, does not seem plausible in view of this reported case of thrombopenic purpura due to mapharsen. Because of the differences of reaction in this case to comparable test doses of mapharsen and neoarsphenamine, it would seem that the factor of quantitative differences of arsenic present in neoarsphenamine and mapharsen might be the more important one. Further treatment with mapharsen of patients already

5. Wintrobe, M. M.: Clinical Hematology, Philadelphia, Lea & Febiger, 1942.

6. Bianchi, A. E.: Comments on a Case of Purpura, Rev. Asoc. méd. argent. **46**: 1566 (Dec.) 1932.

7. Falconer, E. H.; Epstein, N. N., and Wever, G. K.: Purpura Hemorrhagica Following Administration of Neoarsphenamine, Arch. Int. Med. **58**: 495-511 (Sept.) 1936. Falconer and Epstein.[4] Epstein and Falconer.[8]

sensitized to one of the other arsenicals may be extremely hazardous even though it was found that mapharsen produced no ill effects on the blood platelets of patients having had thrombopenic reactions to neoarsphenamine, bismarsen and other arsenicals.[8]

The exact mechanism for this purely thrombopenic reaction to the arsphenamines is not clearly understood. All these reactions are characterized by three findings: (1) free bleeding from mucous membranes, (2) a very rapid fall in circulating thrombocytes, as rapidly as fifteen to thirty minutes following the injection of an arsenical, and (3) evidence of increased capillary fragility as manifested by purpuric spots and a positive Rumple-Leede test. In this case, as well as in others so studied, the bone marrow showed no abnormalities. It is also noteworthy that a great number of platelets can be returned promptly into the general circulation by the injection of epinephrine,[4] although the latter observation was not found to be true in the case herein reported. In most cases of thrombopenic purpura following arsenotherapy the platelet count begins to rise in twenty-four to forty-eight hours and returns to normal in four to seven days after the reaction, as was true in this case. No fatalities have been recorded thus far as a result of this complication, differing in this respect from the other types of blood dyscrasia reactions to the arsphenamines.

It would seem, therefore, that the blood platelets that disappear from the circulation are not actually destroyed and that there has not been selective destruction of the megakaryocytes in the bone marrow. Falconer and Epstein[8] have postulated the theory that the blood platelets leave the larger vessels and enter greatly dilated capillaries, which are more permeable, probably because of some toxic action on the vasomotor center controlling capillary tonus. These investigators[9] have studied the effects of neoarsphenamine on the formed elements of the blood and have found no conclusive evidence that it affects the platelets to any extent. On the other hand, Mu[9] has observed a significant fall in platelets following the intravenous administration of neoarsphenamine. However, it should be noted that he was using doses which were much greater than those ordinarily employed therapeutically in the treatment for syphilis. It would seem, therefore, that thrombopenic reaction to the arsphenamines is due to the development of a sensitivity to repeated injections of the arsenicals employed and resembles to some extent a nitritoid reaction. It is interesting to note that peripheral thrombocytopenia has been observed in experimentally produced anaphylactic shock.[10]

SUMMARY

1. A case was observed of thrombopenic purpura following the prolonged administration of mapharsen. Although a few other cases of this complication following mapharsen have been seen, we believe this to be the first reported case.

2. Although mapharsen has been used with no untoward effects in some cases of thrombopenic purpura in which sensitization to neoarsphenamine has occurred, nevertheless it may be extremely hazardous to employ any arsenical once a patient has had such a reaction.

3. This thrombopenic reaction to mapharsen has many of the characteristics of a sensitivity reaction and resembles the nitritoid phenomenon.

4. From the available evidence it seems reasonable to assume that the platelets in the peripheral blood are not destroyed but are merely dislocated temporarily into the large capillary beds of the vascular tree, which have been rendered more permeable.

5. Isolated thrombopenic reaction following arsenical therapy is invariably associated with a good prognosis, provided the drug is stopped.

8. Epstein, N. N., and Falconer, E. H.: Effects of Neoarsphenamine on Formed Elements of Blood, Arch. Dermat. & Syph. **42**: 909-918 (Nov.) 1940. Falconer and Epstein.[4]

9. Mu, J. W.: Effect of Neoarsphenamine on Number of Blood Platelets, Proc. Soc. Exper. Biol. & Med. **26**: 407-409 (March) 1929.

10. von Behring, E.: Experimentelle Analyse und Theorie der anaphylaktischer und apotoxischer Vergiftung, Deutsche med. Wchnschr. **40**: 1857, 1914. Lee, R. I., and Vincent, F.: Study of Effect of Anaphylaxis and Leech Extract on Coagulation of Blood, J. M. Res. **27**: 445, 1915.

Council on Foods and Nutrition

SPECIAL ARTICLE

This is the ninth and last of a series of articles discussing the significance of protein nutrition in health and disease. This material was prepared by the authors at the request of the Council and has been authorized for publication.

GEORGE K. ANDERSON, M.D., *Secretary.*

THE PRACTICAL USE OF AMINO ACIDS IN PROTEIN NUTRITION

ROBERT ELMAN, M.D.
ST. LOUIS

Amino acids are to protein what glucose is to starch. In other words, they are the unit components of food and tissue protein. Their discovery, purification and identification mark one of the milestones in the development of the science of nutrition. The isolation from foods of these specific chemical components which enter into the metabolic activities of the body represents the most important recent contribution of chemistry to the field of nutrition.

Amino acids differ from vitamins in that they are more than catalysts or enzymes; they actually enter into the structure of body tissue. While they are thus used up like glucose, unlike the latter they are not burned as fuel unless calorigenic elements are absent, when they may act for glucose when the latter is not available. They are also unlike other purified food essentials because there are so many of them. The glucose molecule represents the form in which carbohydrate is utilized; even the vitamin B complex has been divided into a number of different crystalline substances. On the other hand, amino acids are twenty-one or more in number, each different, though conforming to the same general chemical formula in that they contain an amino group and a carboxyl group.

Consideration, therefore, of the amino acids as the structural units of food protein leads immediately to an enumeration of these various amino acids (table 1). Most important is the fact that but ten of them may be considered as "essential." These essential amino acids are also termed indispensable in that the body is unable to manufacture them from other amino acids or from simpler material and that they must be supplied before normal protein metabolism can occur. For example, normal growth will take place if these essential amino acids are fed to growing rats as the sole source of protein in the diet. Yet if one of them is omitted, normal growth is not obtained. In this sense certain of the individual amino acids assume an importance comparable with the vitamins in maintaining normal nutrition and life processes. Much of the recent investigation regarding the nutritive significance of the amino acids has been carried out and described by W. C. Rose.[1]

Further consideration of amino acids reveals the fact that each protein in the body as well as each protein in food has its own individual amino acid composition (table 2). Thus transfers from one protein to another may be conceived as requiring a breakdown of the

Aided by a grant from the Commonwealth Fund.

1. Rose, W. C.: Physiol. Rev. **18**: 109, 1938.

protein molecule into its individual amino acids with the reassembling of them to form another protein. This general procedure is the normal method by which food protein is transformed into tissue protein—hydrolysis or digestion occurs in the gastrointestinal tract; the resulting amino acids are absorbed into the portal system and the synthesis of these building stones then takes place in the liver and other tissues. It is also probable that extra-

TABLE 1.—*The Various Amino Acids in Protein*

Indispensable	Dispensable
Lysine	Aminoacetic acid
Tryptophan	Alanine
Histidine	Serine
Phenylalanine	Norleucine
Leucine	Aspartic acid
Isoleucine	Glutamic acid
Threonine	Hydroxyglutamic acid
Methionine	Proline
Valine	Hydroxyproline
Arginine	Tyrosine
	Cystine

alimentary transfers also require a similar mechanism as, for example, the use of tissue protein in the synthesis of new serum protein after its loss in a hemorrhage. Other types of interchange between protein molecules also occur, as shown for example by the recent studies of Schoenheimer.[2] The important conception to emphasize from these new studies on protein metabolism is one of dynamic rather than static equilibrium. In other words, protein is constantly undergoing rapid and perhaps profound changes of many kinds; the concept of great masses of inactive protein stores must be abandoned—all protein tissue is in a constant state of chemical activity.

By using amino acids instead of food protein the physician can administer protein nourishment in its simplest form just as he uses glucose. With parenteral administration he does not have to depend on digestion and absorption by the gastrointestinal tract. In this way protein starvation can be avoided even though these two functions are completely impaired. Even if the patient requires parenteral fluids, these need no longer be confined to salts or glucose; protein building substances can now be just as easily supplied. Amino acids may also be administered orally for the maintenance of proper nutrition in certain special conditions, as will be described.

SOURCES OF AMINO ACIDS

Like chemically pure glucose and vitamins, amino acids are available in crystalline form and may be purchased on the open market as such. They may then be combined in the desired proportions and given to the patient either by mouth or by injection just as in the case of crystalline vitamins or glucose. The greatest drawback to this is the cost. The large amount of protein nourishment needed makes the use of crystalline amino acids unpractical at the present time, although it may be that in the future chemical methods will be devised whereby crystalline amino acids may be cheap enough to permit their general use. Another objection to crystalline amino acids is the fact that, in preparing some of them, racemic mixtures are obtained containing both the natural and unnatural isomers, which are difficult to separate. All natural proteins contain only the natural isomers, although in the case of some amino acids the two forms are equally utilized. The suggestion of Albanese [3] that the unnatural form may in some cases be deleterious is an important consideration which needs further investigation.

By means of an adequate digestion in vitro of natural proteins a mixture of amino acids may be easily obtained. These procedures are essentially similar to those by which the body produces amino acids from protein food in the gastrointestinal tract and are both practical and cheap. Such methods of preparing amino acids involve the possibility of losing some of the essential ones during the procedure of digestion and purification. However, losses are dependent on the technical details and moreover can be measured by testing the resultant digest both chemically and biologically for the presence of all the essential amino acids. Another disadvantage of using protein hydrolysates as a source of amino acids is the possible generation or introduction of foreign or deleterious substances during manufacture. This difficulty can, apparently, be avoided by carefully conducted procedures. A final possible criticism is the presence of peptides as well as amino acids in the final mixture; this objection appears to be of no practical significance. As long as digestion has been sufficient to remove all traces of true protein molecules, no danger seems to arise from the presence of peptides provided they are not too large. How large they may be is not really known. On the other hand, it may prove advantageous to provide some peptides rather than single amino acids in that one step in the process of building of body protein may be saved.

The several methods for producing amino acids by the digestion of protein may be classified in general into enzymatic and acid hydrolysis methods. Thus far the enzymatic procedure has been the more extensively used and has given very satisfactory results. In a review on nitrogen balance I [4] have reported the successful results obtained with use of a protein digest [5] prepared by pancreatic hydrolysis of casein. This product contains the amino acids of casein and pancreatic tissue, two animal proteins of high biologic value. Although its content of essential amino acids is not accurately known, biologic tests have shown that

TABLE 2.—*Essential Amino Acid Composition of Various Proteins*

	Human Serum Globulin	Human Serum Albumin	Casein	Muscle	Egg White	Gelatin
Arginine	4.8*	6.1*	4.1	7.2	5.8	7.6
Cystine	2.0	3.8	0.3	1.1	2.3	0.1
Methionine	1.0*	1.2*	3.5	3.2	4.4	0.8
Isoleucine	?	2.0	6.5	3.4	?	1.7
Leucine	9.3*	11.9*	12.1	12.1	10.7	3.7
Lysine	0.7*	5.8*	6.9	7.6	6.5	4.2
Histidine	2.5*	3.5*	2.5	2.1	1.8	1.0
Phenylalanine	5.9	7.8	5.2	4.5	5.5	2.0
Threonine	8.3*	5.0*	3.9	5.3	3.6	1.5
Tryptophan	2.8*	0.19*	1.8	1.2	1.5	0.0
Valine	?	4.1	7.0	3.4	6.8	2.5
Total	43.4±	51.4	53.8	51.1	48.9+	25.2

These figures were obtained from Block and Bolling (The Amino Acid Composition of Proteins and Foods, Springfield, Ill., Charles C Thomas Publisher, 1945) with the exception of those marked with an asterisk (*), which represent data obtained by the analysis of gamma globulin and crystalline albumin by Brand, Kassell and Saidel, (J. Clin. Investigation **23**: 437, 1944). They represent grams per hundred grams of the dry protein on the basis of 16 per cent nitrogen.

Note how deficient gelatin is. Note also that serum albumin is deficient in tryptophan and low in isoleucine. A deficiency of isoleucine in human plasma protein has been shown by Hegested, McKibbin and Stare in growth experiments (J. Clin. Investigation **23**: 705, 1944).

2. Schoenheimer, R.: The Dynamic State of Body Constituents, Cambridge, Mass., Harvard University Press, 1942.

3. Albanese, A. A., and Irby, V.: Science **98**: 286, 1943.

4. Elman, R.: Physiol. Rev. **24**: 372, 1944.

5. Trade name Amigen, manufactured by Mead Johnson and Company.

it contains all in sufficient concentration to support growth in rats when given as the sole source of nitrogen.[6] This is one of the most rigid tests of the efficiency of protein. Amino acid preparations produced by enzymatic hydrolysis contain approximately 70 per cent of the potential amino acid nitrogen in the form of amino nitrogen (representing amino acids), most of the remainder being present as peptide nitrogen. In the case of acid hydrolysis more nearly 100 per cent of the nitrogen can be obtained in the form of free amino acids, although it is known that the tryptophan is destroyed in the process of acid hydrolysis. This must be replaced in the products prepared by this method. It has now been demonstrated clinically that protein hydrolysates containing amino acids and peptides, when given in adequate amount, can maintain nitrogen balance effectively and cause regeneration of serum proteins.[6a]

GENERAL INDICATIONS FOR THE USE OF AMINO ACIDS

Whenever there is a failure in normal ingestion, digestion and absorption of food protein, inevitable deficiencies in protein begin to develop at once unless protein is supplied in some other way. The proper use of amino acids provides a practical method of preventing protein starvation. Any patient who does not eat will develop a protein deficiency; any patient who eats but does not digest or absorb his food will likewise suffer protein starvation. He may, of course, suffer deficiencies in other elements, water and salts, for example. Just as the universal use of solutions of glucose and saline obviates many of these deficiencies, the wider use of amino acids will prevent deficiencies in protein, which may be just as important as preventing deficiencies of water, electrolyte and vitamins. As far as parenteral administration is concerned, it may be stated as a general proposition that, when solutions of saline or glucose are injected for maintenance of daily needs, amino acids are indicated as well.

Protein deficiencies are actually of frequent occurrence in clinical medicine, yet they are seldom recognized because we as physicians are apt to view an inadequate protein intake with complacency. While we have recognized the importance of supplying glucose and vitamins, water and salts, we have looked on other food (e. g., protein) as being dispensable. We have been lulled into a false sense of security by the supposition that there are large stores of reserve body protein and that the absence of protein intake may result in little or no difficulty. The fallacy of this view is indicated in a recent review[6b] and in the other papers of this series in which the various clinical manifestations of protein deficiency have been described. Of these, a decrease in the level of plasma proteins (hypoproteinemia) is of great importance. However, it may be emphasized that hypoproteinemia, while not always found, is one of the objective evidences of protein deficiency, particularly when there is a fall in the albumin fraction. Though often masked by dehydration and an increase in the globulin fraction, a fall in plasma proteins has been observed frequently, especially after operation. Indeed, hypoproteinemia has now been demonstrated to be frequent in both medical and surgical wards of any hospital.

SPECIFIC INDICATIONS FOR THE CLINICAL USE OF AMINO ACIDS

A. Patients unable to ingest protein because of severe gastrointestinal disease or persistent vomiting from any other cause: In these cases amino acids must obviously be given parenterally. They include such conditions as intestinal obstruction, local or general peritonitis, acute cholecystitis and a severe peptic ulcer in which the ingestion of any food provokes severe pain or vomiting. Important in this group are cases of chronic disease such as gastrointestinal carcinoma, in which operation is contemplated in the presence of severe malnutrition which cannot be corrected by a high protein diet. The preoperative preparation in such cases with parenteral protein will lower mortality, facilitate surgery and reduce complications. To be included in this group also are postoperative cases in which abdominal operations have been performed and in which nothing by mouth is permitted in order to achieve gastrointestinal rest so that healing may occur. In such cases, too, protein starvation will obviously occur unless nourishment is given parenterally. Many manifestations of protein starvation can thus be avoided and the clinical condition be so improved thereby that a full diet by mouth can be started much earlier than when the parenteral injections are limited to water, salts and glucose.

Patients suffering from advanced inanition must also be included in this group. Amino acid therapy recently has been shown capable of saving many lives from the late, or what might be called the hitherto irreversible, stage of starvation. In the present war thousands, perhaps millions, have already died because of inanition. Many more will die even if food is made available for them. It has been known for a long time that after a certain point in progressive starvation a fatal outcome cannot be avoided because the gastrointestinal tract becomes incapable of function. Fluid or food cannot be swallowed or, if given by tube, is vomited or provokes diarrhea. In the recent (1943) famine in India Krishnan and his co-workers[6c] showed for the first time that the intravenous injection of a solution containing hydrolyzed protein and glucose reduced considerably the mortality in these late cases. Injections of glucose alone, of saline solution, plasma or blood proved relatively ineffective. Only a few injections, averaging three, of the hydrolyzed protein solution were necessary. After this treatment patients were revived and able to start taking food and fluid by mouth. These investigators reported 5,000 injections with few untoward reactions, none of them serious. Their hydrolysate was a papain digest of pork.

B. Patients able to ingest protein but in whom the amount is inadequate or difficulty is encountered in digestion or absorption: In this group of cases amino acids may sometimes be given orally, but in many they will have to be given parenterally. This group includes a wide variety of diseases, particularly those in which severe malnutrition has developed because of the patient's inability to take sufficient food. After a certain period of malnutrition, the gastrointestinal tract becomes incapable of digesting a sufficient amount of protein food, especially if edema of the gastrointestinal tract is present, and vomiting or diarrhea may result. Sparing digestion

6. Mueller, A. J., and others: J. Biol. Chem. **112:** 594, 1940.

6a. Brunschwig, A.; Clark, D. E., and Corbin, N.: Ann. Surg. **115:** 1091, 1942. Gardner, C. E., Jr., and Trent, J. C.: Surg., Gynec. & Obst. **75:** 657, 1942. Shohl, A. T.; Butler, A. M.; Blackfan, K. C., and MacLachlan, E.: J. Pediat. **15:** 469, 1939. Hartmann, A. F. and others, ibid. **24:** 371, 1944. Elman, R.: Ann. Surg. **112:** 594, 1940; Bull. New York Acad. Med. **20:** 220, 1944.

6b. Elman, R.: Ann. Surg. **120:** 350, 1944.

6c. Krishnan, K. V.; Narayanan, E. K., and Saukaran, G.: Indian M. Gaz. **79:** 160, 1944.

by giving amino acids orally will sometimes obviate the difficulty, as reported by Olmsted,[7] but in many cases the oral intake of food will have to be supplanted or supplemented for a time by intravenous administration in order to insure a sufficient intake. This is true of those with extreme malnutrition, as just described, but is not infrequently seen after severe injuries and extensive thermal burns. In other cases digestion or absorption is impaired because of severe gastroenteritis, ulcerative colitis or regional ileitis, so that food by mouth provokes severe diarrhea and thus digestion and absorption are prevented. In such a case also the substitution of amino acids for whole protein by mouth may, by sparing the necessity for digestion, result in adequate absorption, although in many cases it will be advisable to put the gastrointestinal tract completely at rest by giving nourishment parenterally. To be included in this group are certain types of intestinal fistulas in which profuse discharge of undigested contents escape.

C. Other indications including patients with allergy and intractable and especially bleeding peptic ulcer: In cases of extensive protein allergy the use of amino acids instead of whole protein will frequently avoid this difficulty and they have been used as such by a number of observers, especially in infancy, with very favorable results.[8] Olmsted [7] has used amino acids also during the diagnostic period in severe food allergy, thus avoiding the usual starvation which otherwise occurs. In peptic ulcer the use of amino acid mixtures orally has proved effective on purely clinical grounds with evidence of healing, as shown by x-ray examination in a series of peptic ulcers previously refractory to medical therapy as reported by Co Tui.[9] In a series of bleeding peptic ulcers a similar regimen of oral amino acids has been shown by Levy [10] to result in a much more rapid recovery than in cases in which the ordinary regimen of whole protein food has been employed. This may be due to the fact that the administration of amino acids not only permits protein nourishment without the need for digestion but has an additional advantage in that amino acids act as a buffer and thus tend to neutralize gastric acidity, as shown by Levy and Siler.[11]

THE ORAL USE OF AMINO ACIDS

The use of amino acids by mouth is therapeutically desirable in that it avoids the necessity of protein digestion. Thus it would seem that larger amounts of protein nourishment could be administered in this way and more rapid correction of protein deficiencies in extremely malnourished patients achieved. While clinical experience is not extensive, it has been my [12] observation that, in many of these patients in whom the ingestion of protein food provokes diarrhea or even vomiting, the substitution of amino acids permits absorption without difficulty. This would seem to be especially true of jejunal feeding; for example, Mulholland and his associates [13] have administered oral amino acids very soon after gastric resection through a jejunal tube passed across the stomach at the time of operation. They have succeeded in administering a 3,000 calory, 200 gram protein diet in this way with striking improvement in postoperative asthenia and rapidity of convalescence.

Amino acids dissolved in water, milk or juices may be taken by mouth. However, the taste of some of the commercial preparations available at present is unpleasant. Attempts have been made to flavor the solution but these have not been entirely successful, although the taste can be partially disguised in a number of ways. One method which has been employed by Co Tui is to stir 20 Gm. of the powdered protein hydrolysate in a small amount of water and ask the patient to follow it up with 20 Gm. of a sugar solution as a chaser. This is done ten to fifteen times a day and thus permits the ingestion of 200 to 300 Gm. of protein substance in the form of amino acids in twenty-four hours.

Tube Feeding.—The unpleasant taste of some amino acid preparations may be avoided by the use of tube feeding. Obviously a jejunostomy or a gastrostomy tube inserted at operation avoids the disadvantages of passing and retaining a nasal or an oral catheter. On the other hand, jejunal feeding by tube can also be achieved without an additional abdominal incision by inserting the tube across the lumen of the stomach into the lumen of the jejunum at the time of operation usually performed for gastric resection. This permits gastric rest and has been described in detail by Ravdin [14] and Mulholland.[13] Ordinarily, however, tube feeding requires the passage of a catheter into the stomach through the nose or mouth. Twenty Gm. each of a protein hydrolysate and simple carbohydrate in about 200 cc. of water may then be administered ten or fifteen times a day during day and night if desired, thus permitting the large intake of 200 to 300 Gm. of protein nourishment along with the same amount of carbohydrate.

While amino acids and glucose alone are the simplest formula for oral feeding, a more complete diet may easily be administered by adding fat according to the technic devised by Olmsted.[7] Olive oil is emulsified with the aid of gelatin, and the amino acids and carbohydrates are then added. Olmsted has been able to administer large amounts of food through a gastric tube in cases of severe malnutrition and start the patient on the road to nutritional recovery much more effectively and rapidly than is possible through persuasion or other methods using protein foods. Other suggestions for the addition of amino acids in tube feeding will be found in the paper of Lund and Levenson and others in this series.

It should be mentioned, of course, that vitamin mixtures must be added to the amino acids fed by mouth. Any of the preparations on the market may be used, particularly those that are available in liquid form. An adequate amount is simply added to the mixture given by tube.

PARENTERAL ADMINISTRATION OF AMINO ACIDS

The parenteral administration of protein food by means of amino acids represents as great an advance in therapy as the injection of glucose as a means of supplying calories or of water and electrolyte in maintaining water balance and in correcting dehydration, or as the injection of crystalline vitamins in combating vitamin deficiencies. Indeed, the addition of amino acids to the usual parenteral fluids makes possible the

7. Olmsted, W. H.; Harford, C. G., and Hampton, S. F.: Use of Synthetic Diet for Food Allergy and Typhoid, Arch. Int. Med. **73**: 341 (April) 1944.

8. Hill, L. W.: Amino Acids as a Source of Nitrogen for Allergic Infants, J. A. M. A. **116**: 2135 (May 10) 1941.

9. Co Tui: Unpublished observations.

10. Levy, J. S.: Gastroenterology, to be published.

11. Levy, J. S., and Siler, K. A.: Am. J. Digest. Dis. **9**: 354, 1942.

12. Elman, R.: Am. J. Digest. Dis. **10**: 48, 1943.

13. Mulholland, J. H.; Co Tui; Wright, A. M., and Vinci, V. J.: Ann. Surg. **117**: 512, 1943.

14. Ravdin, I. S.; Stengel, A., Jr., and Prushankin, M.: Control of Hypoproteinemia in Surgical Patients, J. A. M. A. **114**: 107 (Jan. 13) 1940.

administration of an almost complete diet without recourse to the usual digestive processes. Thus starvation can be avoided almost completely even though the patient is unable to take anything by mouth. Complete rest of the gastrointestinal tract, which heretofore inevitably resulted in protein starvation, can now be achieved with an almost full dietary intake. Thus both food and rest can be utilized; both factors are obviously very important in the healing of many types of lesions both surgical and medical. To limit the parenteral diet to water, electrolyte, glucose and vitamins is no longer justified; the addition of amino acids makes the mixture more nearly complete.

Methods of Parenteral Administration.—Preparations of hydrolyzed protein are available as sterile solutions ready for intravenous injection or in the form of a powder which with appropriate care and facilities can be made into a solution for intravenous use. The mixture which I recommend is one containing 5 per cent protein hydrolysate, 5 per cent glucose and 0.2 per cent sodium chloride. A liter of such a solution provides four of the necessary nutritional elements: water, salt, carbohydrate and protein. It should be emphasized, of course, that the biologic value of any amino acid mixture or preparation of hydrolyzed protein depends on its content of essential amino acids, and this in turn depends on the proteins selected for hydrolysis as well as the details of the procedure itself. It is therefore important for the physician to be sure that any solution he uses has been sufficiently tested in order to demonstrate that it contains a sufficient concentration of all the essential amino acids to maintain normal protein metabolism.

The rate of injection of hydrolyzed protein cannot be too great lest symptoms of nausea and vomiting be produced. This rate is somewhat slower than that usually given for glucose solutions alone; e. g., for 1 liter containing 5 per cent protein digest and 5 per cent glucose a two hour period is usually required in an average sized adult. Great individual variations are observed and it is often permissible to let the patient adjust the rate of flow himself. In many cases a liter will run in during one and one-half hours with no unpleasant subjective symptoms, in others such a rate will provoke nausea, a feeling of warmth and occasional slight abdominal pain or perhaps other unpleasant symptoms. A two hour period is really required for full utilization of the injected glucose and amino acids; a more rapid rate may permit loss of either in the urine, though the amount is not very great even with a one hour injection.

Injections are best given a liter at a time, one in the morning and one in the afternoon. If the injection supplements food by mouth it should be given in the evening or after the last meal so as not to interfere with the eating of food.

Deleterious Effects.—No intravenous injection can be given with impunity; the possible dangers have been sufficiently emphasized by many and great care must always be exercised regardless of the solution given. The physician must remember, however, that a solution of amino acids is an excellent culture medium and particular care must be taken to prevent contamination. In this sense, it is similar to whole blood and plasma except that bacterial growth is much more apt to occur in amino acid solutions. Pyrogenic reactions may be produced by such contamination. Even with utmost care and elimination of bacterial growth solutions of amino acids are potentially as capable of provoking reactions when given intravenously as plasma or whole blood transfusions, although at the Barnes Hospital they have been less frequent than those experienced with plasma or whole blood when given with the same type of tubing and with the same care. Careful scrutiny was made of all injections during the past four months. Of 865 liters injected intravenously during this time, there were seven reactions. None were serious, and a few were extremely mild.

Subcutaneous Injections.—Amino acids may be injected subcutaneously as well as intravenously except that, like glucose, the solution should be isotonic with the blood and neutral in reaction. Thus a mixture containing 5 per cent glucose and 5 per cent amino acids should be diluted with an equal quantity of distilled water to provide isotonicity in order to achieve a maximum degree of absorption and a minimum degree of local reaction. An isotonic solution obviously requires the use of a larger volume of fluid than is necessary with intravenous injection.

TABLE 3.—*A Program for Daily Parenteral Feeding (Including Amino Acids)* *

Initially larger doses and plasma or whole blood transfusions may be required to meet acute deficits.

	Solutions Required	Actual Amount of Nutriments				
		H_2O, Cc.	Salt, Gm.	Glucose, Gm.	Protein as Amino Acids, Gm.	Calories
A. No protein depletion	Protein hydrolysate 5%-glucose 5%, 1 liter; glucose 5%, 1 liter; isotonic solution of sodium chloride,† 1 liter	3,000	11	100	50	600
B. Moderate protein depletion	Protein hydrolysate 5%-glucose 5%, 2 liters; isotonic solution of sodium chloride,† 1 liter	3,000	13	100	100	800
C. Severe protein depletion	Protein hydrolysate 5%-glucose 5%, 3 liters	3,000	6	150	150	1,200

* Vitamins are given separately. In certain surgical patients vitamin C is especially indicated in doses of 1 Gm. per day.

† After severe operations it may be inadvisable to inject saline solution in view of the evidence indicating the existence of a postoperative intolerance to salt (Coller, F. A., and others: Postoperative Salt Intolerance, Ann. Surg. **119**: 533, 1944). In such cases 5 per cent glucose in water is substituted for the isotonic solution of sodium chloride.

Plasma versus Amino Acids.—Plasma transfusions are also a means by which protein can be introduced parenterally and must be discussed in contrast to the method already described with amino acids. Actually, both ways of introducing protein substance have distinct indications and often should be used in the same patient. Plasma offers an immediate and often life saving method of replacing plasma protein depleted by hemorrhage, burns or other acute diseases. It should be emphasized that for such rapid replacement plasma represents but half of the blood and that, when red cells are lost, whole blood rather than plasma should be given. However, when plasma proteins have been depleted because of malnutrition, the use of transfusions as the sole source of protein has been disappointing largely because of the fact that the injected protein fails to remain in the circulating blood but leaves very rapidly, apparently in an attempt to replace protein deficiencies throughout the body. As a sole source of protein, moreover, plasma transfusions are expensive and inconvenient. Thus, 60 Gm. of protein administered in this way requires the bleeding of 4 donors, and processing.

Large and repeated plasma transfusions, unlike the use of amino acid solutions, may lead to reactions. Actually but little is known of the metabolic behavior of plasma protein when injected into the blood stream. Knowledge of the fate of the injected plasma protein is important in view of the fact that this method of introducing protein food has no counterpart in any normal physiologic process. The intravenous injection of amino acids, on the other hand, represents a physiologic method in that it is a normal way in which protein food enters the blood stream from the gastrointestinal tract. Nevertheless, in nutritional hypoproteinemia one or more ordinary plasma or whole blood transfusions are excellent supplementary procedures. Moreover, when plasma or whole blood are the only fluids available for the parenteral administration of protein they should be used in larger amounts and will exert considerable clinical benefit.

A PLAN FOR PARENTERAL FEEDING

Before undertaking the administration of amino acids by injection, the physician should determine as far as possible the amounts required and add to this the other nutritional requirements. This is an important consideration because each substance requires the presence of the others in order to be most completely effective. Water balance is often disturbed in protein deficiency; carbohydrate is needed for utilization of fat and protein; vitamins play an important part in carbohydrate and probably in protein utilization. The use of all these substances in appropriate amounts is therefore essential in planning such a parenteral diet. In planning the dose of parenteral fluids in each case it is of considerable value to distinguish between acute deficits and amounts required for maintenance. It should be emphasized, however, that any parenteral method is inconvenient, expensive and not without danger and should not be used with complacency. It should be employed for specific indications, only as much given as needed, and replaced as soon as possible by the normal oral route.

Acute Deficiencies in Dehydrated Patients.—Several liters of fluid up to 5 may be required to correct dehydration. Under certain circumstances special fluids for the treatment of acidosis and alkalosis also are indicated. Plasma or whole blood transfusion will similarly be required to correct acute hypoproteinemia and anemia. This type of parenteral therapy is fairly well known and really does not fall within the province of the present discussion. It is mentioned because such injections must always precede a plan for meeting the daily needs.

Daily Requirements.—It is probable that for short periods a complete caloric intake may be sacrificed in view of the fact that in many instances much of the caloric needs may safely be supplied by tissue fat.[14a] This is permissible except in the case of malnutrition in which tissue stores of fat have been exhausted. In such instances the administration of fat intravenously has great practical advantages and will probably be available in the near future but at present cannot be used.

For surgical or other patients unable to take food by mouth, a simple plan may be drawn up in which all of the nutritional elements can be introduced intravenously in a volume of 3,000 cc. This amount of water is probably necessary in most cases for maintaining water balance and providing a urinary output of about 1,000 cc. or more per day. Of the 3 liters, 1 liter at least should contain 5 per cent protein digest and 5 per cent dextrose. Of the other 2 liters 1 will contain 5 per cent dextrose in water and the other isotonic solution of sodium chloride, which can be injected subcutaneously, thus relieving the patient of the long period required for the administration of 3 liters of fluid into the vein. This should suffice in the average case in which no severe protein, salt or water deficiency is present at the time of operation.

In more severely depleted patients 2 liters instead of 1 liter of 5 per cent protein hydrolysate and 5 per cent glucose should be given; the remaining liter will consist of either isotonic solution of sodium chloride or 5 per cent glucose in water, the former having the advantage of being injectable under the skin.[15] In the cases of most severe protein depletion, all of the 3 liters should consist of 5 per cent amino acid preparation and 5 per cent glucose. In table 3 is listed the total intake in the three types of programs just outlined.

14a. Elman, R.; Davey, H. W., and Kiyasu, R.: J. Lab. & Clin. Med. **30**: 273, 1945.

15. While many surgeons give 5 per cent glucose by hypodermoclysis with satisfactory result, I do not do so because I feel that it is slowly absorbed and apt to be irritating as compared with isotonic solution of sodium chloride. As regards amino acids, the same can be said as for glucose provided the reaction of the solution is neutral; hypodermoclysis can be used by merely diluting the 5 per cent amino acid, 5 per cent glucose solution with an equal amount of distilled water. In children this has been employed in a more concentrated mixture (Hartmann, A. F., and others: J. Pediat. **24**: 371, 1944).

Council on Industrial Health

SELECTED PUBLICATIONS IN INDUSTRIAL HEALTH

The office of the Council on Industrial Health is frequently asked to recommend publications relating to industrial medicine, surgery and hygiene. The list of textbooks and periodicals which follows was compiled from information furnished by the chairmen of committees on industrial health in the state medical societies, directors of industrial hygiene bureaus in state and federal agencies, and by two hundred full time industrial physicians throughout the country.

C. M. PETERSON, M.D., *Secretary.*

Books

GENERAL TREATMENT

Division of Industrial Hygiene, National Institute of Health, United States Public Health Service: Manual of Industrial Hygiene. $3. Pp. 508. Philadelphia, W. B. Saunders Company, 1943.

International Labour Office: Occupation and Health, Volume I, pp. 999. Geneva, 1930. Volume II, pp. 1,310. Geneva, 1934. $24 set. Supplements, Geneva, 1938, 1939, 1940, 1944, 25 cents each.

Wampler, Fred J.: The Principles and Practice of Industrial Medicine. $6. Pp. 579. Baltimore, Williams & Wilkins Company, 1943.

Sappington, C. O.: Essentials of Industrial Health. $6.50. Pp. 626, with 63 illustrations. Philadelphia, J. B. Lippincott Company, 1943.

Lanza, A. J., and Goldberg, Jacob A.: Industrial Hygiene. $8.50. Pp. 743. New York, Oxford University Press, 1939.

Kober, George M., and Hayhurst, Emery R.: Industrial Health. $15. Pp. 1,184, with illustrations. Philadelphia, P. Blakiston's Son & Co., 1924.

Rosenau, Milton J.: Preventive Medicine and Hygiene. Ed. 6. $10. Pp. 1,481. New York, D. Appleton-Century Company, 1935.

Clark, W. Irving, and Drinker, Philip: Industrial Medicine. Ed. 2. $3. Pp. 262. New York, National Medical Book Company, Inc., 1935.

INDUSTRIAL MEDICINE AND SURGERY

Schwartz, Louis, and Tulipan, Louis: A Text-Book of Occupational Diseases of the Skin. $10. Pp. 799, illustrated with 116 photographs. Philadelphia, Lea & Febiger, 1939.

Johnstone, Rutherford T.: Occupational Diseases; Diagnosis, Medicolegal Aspects and Treatment. $7.50. Pp. 558, illustrated. Philadelphia, W. B. Saunders Company, 1941.

Sappington, C. O.: Medicolegal Phases of Occupational Diseases. An Outline of Theory and Practice. $2.75. Pp. 405. Chicago, Industrial Health Book Company, 1939.

Kessler, Henry H.: Accidental Injuries—The Medicolegal Aspects of Workmen's Compensation and Public Liability. Ed. 2, enlarged and thoroughly revised. $10. Pp. 803, illustrated with 202 engravings. Philadelphia, Lea & Febiger, 1941.

White, R. Prosser: The Dermatergoses or Occupational Affections of the Skin, Giving Descriptions of the Trade Processes, the Responsible

Agents and Their Actions. Ed. 4. Pp. 716, with 66 plates, including 72 figures. London, H. K. Lewis & Co., Ltd., 1934.

Lanza, A. J.: Silicosis and Asbestosis. $4.25. Pp. 439. New York, Oxford University Press, 1938.

Resnick, Louis: Eye Hazards in Industry—Extent, Cause and Means of Prevention. $3.50. Pp. 321. New York, Columbia University Press, 1941.

McBride, Earl D.: Disability Evaluation—Principles of Treatment of Compensable Injuries. Ed. 2, revised. $8. Pp. 623, with 374 illustrations. Philadelphia, J. B. Lippincott Company, 1938.

Gardner, Leroy U., editor, National Tuberculosis Association: Tuberculosis in Industry—Report of Symposium Held at the Saranac Laboratory for the Study of Tuberculosis, Saranac Lake, N. Y., June 9-14, 1941.

Davis, George Gilbert; Salmonsen, E. M., and Earlywine, J. L.: Pneumoconioses (Silicosis)—Bibliography and Laws, with a foreword by E. R. Le Count. $7.50. Pp. 482. Chicago, Industrial Medicine, Inc., 1934.

Christopher, Frederick: Minor Surgery, with a foreword by Allen B. Kanavel. Ed. 5. $10. Pp. 1,006. Philadelphia, W. B. Saunders Company, 1944.

Lasher, Willis W.: Industrial Surgery—Principles, Problems and Practice. $6. Pp. 452, with 193 illustrations. New York, Paul B. Hoeber, Inc., 1938.

Reed, Jewett V., and Harcourt, A. K.: The Essentials of Occupational Diseases. $4.50. Pp. 225. Baltimore, Charles C Thomas, 1941.

Kanavel, Allen B.: Infections of the Hand—A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand and Forearm. Ed. 7. $6. Pp. 503. Philadelphia, Lea & Febiger, 1939.

Brahdy, Leopold, and Kahn, Samuel: Trauma and Disease. Ed. 2. $7.50. Pp. 655. Philadelphia, Lea & Febiger, 1941.

Key, John Albert, and Conwell, H. E.: Management of Fractures, Dislocations, and Sprains. Ed. 3. $12.50. Pp. 1,303. St. Louis, C. V. Mosby Company, 1942.

Painter, Charles F., editor: Year Book of Industrial and Orthopedic Surgery. $3. Pp. 432. Chicago, Year Book Publishers, Inc., 1945.

Kuhn, Hedwig S.: Industrial Ophthalmology. $6.50. Pp. 294, with 114 text illustrations including 2 color plates. St. Louis, C. V. Mosby Company, 1944.

Hueper, W. C.: Occupational Tumors and Allied Diseases. $8. Pp. 896. Baltimore, Charles C Thomas, 1942.

Todd, James C., and Sanford, A. H.: Clinical Diagnosis by Laboratory Methods—A Working Manual of Clinical Pathology. Ed. 10. $6. Pp. 911. Philadelphia, W. B. Saunders Company, 1943.

Amor, Arthur J.: X-Ray Atlas of Silicosis—With Translations of the Legends into French by Robert E. Horne and with a foreword by Sir Wilson Jameson. $8. Pp. 206. Baltimore, Williams and Wilkins Company, 1941.

Heinrich, Herbert W.: Industrial Accident Prevention—A Scientific Approach. Ed. 2. $3. Pp. 448. New York, McGraw-Hill Book Company, Inc., 1941.

INDUSTRIAL HYGIENE

Lehmann, Karl B., and Flury, Ferdinand: Toxicology and Hygiene of Industrial Solvents—With Translation by Eleanor King and Henry F. Smyth Jr. $5. Pp. 378. Baltimore, Williams & Wilkins Company, 1943.

Henderson, Yandell, and Haggard, H. W.: Noxious Gases and the Principles of Respiration Influencing Their Action. Ed. 2. $3.50. Pp. 294. New York, Reinhold Publishing Corp., 1943.

Drinker, Philip, and Hatch, T. F.:. Industrial Dust—Hygienic Significance, Measurement and Control. $4. Pp. 316. New York, McGraw-Hill Book Company, 1936.

Hamilton, Alice: Industrial Poisons in the United States. $5. Pp. 590. New York, Macmillan Company, 1925.

Browning, Ethel: Toxicity of Industrial Organic Solvents. $3.50. Pp. 388. New York, Chemical Publishing Company, 1938.

McNally, William D.: Toxicology. $10. Pp. 1,022. Chicago, Industrial Medicine Publishing Company, 1937.

Jacobs, Morris B.: Analytical Chemistry of Industrial Poisons, Hazards and Solvents. $7. Pp. 661. New York, Interscience Publishers, Inc., 1941.

Hamilton, Alice: Industrial Toxicology (Harper's medical monographs). $3. Pp. 352. New York, Harper & Bros., Publishers, 1934.

American Society of Heating and Ventilating Engineers: Heating, Ventilating, Air Conditioning Guide. Annual. $5.

Ficklen, Joseph B.: Manual of Industrial Health Hazards—Comprising the occurrence and uses, the properties, clinical symptomatology, permissible standards, physiological responses and methods for the evaluation of over 90 noxious vapors, gases and dusts, including a chart showing potential health hazards occurring in 108 manufacturing classes. $4. Pp. 176. West Hartford, Conn., Service to Industry, 1940.

Sollmann, Torald H.: Manual of Pharmacology and Its Applications to Therapeutics and Toxicology. Ed. 5. $7.50. Pp. 1,190. Philadelphia, W. B. Saunders Company, 1936.

Alden, J. L.: Design of Industrial Exhaust Systems. $3. Pp. 220. New York, Industrial Press, 1939.

Hodgman, Charles D., and Holmes, Harry N.: Handbook of Chemistry and Physics: A Ready Reference Book of Chemical and Physical Data. Ed. 26. $3.50. Pp. 2,515. Cleveland, Chemical Rubber Company, 1942.

Journals and Periodicals

Industrial Medicine. $5 a year. Industrial Medicine Publishing Company, Chicago, 605 North Michigan Avenue.

Journal of Industrial Hygiene and Toxicology. $6 a year. Williams & Wilkins Company, Mount Royal & Guilford avenues, Baltimore 2.

Journal of the American Medical Association. $8. a year. American Medical Association, 535 North Dearborn Street, Chicago 10.

Industrial Hygiene Digest. Industrial Hygiene Foundation of America, 4400 Fifth Avenue, Pittsburgh 13.

American Journal of Public Health and the Nation's Health. $5 a year. American Public Health Association, 1790 Broadway, New York 19.

Public Health Reports. $2.50 a year. United States Public Health Service, Washington, D. C.

Industrial and Engineering Chemistry, Industrial Edition. $3 a year to members, $4 a year to nonmembers. American Chemical Society, Easton, Pa.

National Safety News. $4 a year. National Safety Council, 20 North Wacker Drive, Chicago 6.

Public Health Bulletins. United States Public Health Service, Washington, D. C.

Industrial Hygiene Bulletin. Division of Industrial Hygiene, New York State Department of Labor. Reprinted from the Industrial Bulletin issued each month at Albany by the Industrial Commissioner of the State of New York, Albany, N. Y.

Industrial Standardization. $4 a year. American Standards Association, 70 East 45th Street, New York 17.

American Journal of Surgery. $10 a year. American Journal of Surgery, Inc., 49 West 45th Street, New York 19.

Heating and Ventilating. $2 a year. Industrial Press, 148 Lafayette Street, New York.

Chemical Abstracts of American Chemical Society. $12 a year. American Chemical Society, 1155 16th Street, Washington, D. C.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

SCARLET FEVER STREPTOCOCCUS TOXIN FOR THE DICK TEST (See New and Nonofficial Remedies, 1944, p. 577).

The following dosage form has been accepted:

WYETH, INCORPORATED, PHILADELPHIA

Scarlet Fever Streptococcus Toxin for the Dick Test: 2 cc. and 10 cc. vials containing sufficient diluted toxin for withdrawal to perform five and fifty tests, respectively. Preserved with 0.4 per cent phenol.

PYRIDOXINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1944, p. 618).

The following additional dosage form has been accepted:

LAKESIDE LABORATORIES, MILWAUKEE

Tablets Pyridoxine Hydrochloride: 20 mg.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1944, p. 417).

The following dosage form has been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Perles Diethylstilbestrol: 5 mg.

SULFAMERAZINE (See Supplement to New and Nonofficial Remedies, 1944, p. 10).

The following dosage form has been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Tablets Sulfamerazine: 0.5 Gm.

NICOTINAMIDE (See New and Nonofficial Remedies, 1944, p. 617).

The following dosage form has been accepted:

PITMAN-MOORE CO., INDIANAPOLIS

Solution Nicotinamide 100 mg. per 2 cc.: 2 cc. ampuls.

SYNTHETIC OLEOVITAMIN D (See New and Nonofficial Remedies, 1944, p. 623).

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Viosterol in Oil: 10 cc. and 50 cc. bottles. Viosterol in vegetable oil.

RIBOFLAVIN (See New and Nonofficial Remedies, 1944, p. 613).

The following additional dosage form has been accepted:

MEAD JOHNSON & CO., EVANSVILLE, IND.

Tablets Riboflavin: 5 mg.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 30, 1945

REHABILITATION AND REEMPLOYMENT

As the rehabilitation program unfolds, medicine must assume responsibility for competent treatment and reconditioning, followed by placement in occupations based on a medical evaluation of residual ability rather than disability. From the latter concept selective placement has emerged. Selective placement demands the matching of the physical, mental and emotional capacity of an individual, his intelligence, talents, skills, experiences, desires and motivations with the technologic and physical demands of a given job.

Placement has long been practiced by private industry. Reported observations of success or failure have been relatively few. The Council on Industrial Health will shortly sponsor jointly with the Veterans Employment Service and the Occupational Analysis Division of the War Manpower Commission a controlled experiment in selective placement. The essential elements will be an adequate psychosomatic evaluation of a worker by a qualified examining physician, a job description by an occupational analyst, suitable attention to environmental hygiene and sanitation, and the application of the matching technic by medical and employment officers. Ultimately the experiment will extend to various kinds and sizes of industrial plants and to normal as well as subnormal workers. Any procedure which brings the right man and the right job together appeals to industry as a desirable objective from the varying points of view of human relations, health, safety and production.

Selective placement expresses capacity for work in terms of ability rather than of disability. The medical profession has struggled endlessly with efforts to define and determine disability. Methods have not yet been devised which do not yield wide variations in interpretation by different individuals. Percentage determination of disability has led to flagrant abuses in claim adjudication both in workmen's compensation affairs and in common law. The more positive approach which evaluates what a man has left rather than what he has lost should appeal to physicians as more amenable to logical and scientific appraisal.

Of the two major programs in rehabilitation, veteran reemployment still overshadows the activities of the state rehabilitation agencies now developing under the egis of the federal Office of Vocational Rehabilitation. Many industries, recognizing their obligations for veteran reemployment under the Selective Service and Training Act of 1940, have developed comprehensive procedures which include medical examination and placement. A feeling is growing, however, that reemployment of veterans is a community responsibility requiring participation of all social agencies as well as employers. Just what will be expected of the medical profession under such an arrangement is not altogether clear. Employers will however be interested in preplacement physical appraisal of disabled veterans. The Committee on Rehabilitation and Employment of the Council on Industrial Health is developing a series of recommendations about veteran reemployment for the guidance of physicians and medical organizations. The procedure which is being developed will avoid duplication of physical examinations either through central registration in a community reemployment center or by means of a card issued to the worker bearing essential data, which can be presented at the time of any interview.

INDUSTRIAL HEALTH—POSTWAR

Currently the demand for health services in industry is greater than the medical and allied professions are prepared to meet. Will this interest maintain itself after the stimulation of war production is over? Reconversion has already curtailed medical activity in a few war plants; on the whole, however, optimism is warranted as to the postwar course of industrial medicine. Certainly governmental agencies, committed to capacity peacetime employment and production, are not likely to moderate present activity in industrial hygiene or workmen's compensation. At the moment proposals are under consideration to expand industrial hygiene services in both federal and state health agencies to a considerable degree, through earmarked allotments in the budget of the U. S. Public Health Service. Furthermore, legislation now under consideration would make available to all federal employees occupational health services similar to those furnished by private industry. Extension into the states and municipalities will provide service to millions of government wage earners. Labor is more and more alive to its own responsibilities for health conservation and education. Safe and healthful working conditions are unquestionably here to stay as factors in collective bargaining. Management, through its national organizations and trade associations, has recognized the objectives of industrial health and is actively advocating their widespread

adoption. Medicine has accepted greater individual and collective responsibility for industrial health service than ever before.

Observers of industrial medical activity note its uneven distribution. Medicine and industry have not developed a formula which presents the benefits of industrial health service convincingly enough to attract full support from the great majority of small plant owners. Past demonstrations have shown that such services can be furnished within the means of almost any employer by using various combinations of part time service of physicians and nurses. One especially promising experiment is taking place in the Fort Greene District of Brooklyn, where the county medical society and the local health agency have joined forces with employers, labor and social agencies to promote a plan of health education sponsored by plant labor-management health committees. On this foundation the larger superstructure of a plant medical service can be built. In nearby Astoria, nursing and industrial hygiene services are supplied to small industry provided the plant employs a physician and complies with other requirements which include proper medical supervision and adequate record keeping. In time the employer will no doubt assume full support of the project.

Special medical services of various kinds will probably be introduced rapidly in the postwar period. There are few independent consultants in industrial hygiene, sanitation or ventilation. Clinical pathologists who have some acquaintance with toxicology could well expand their professional horizons to provide consultation service to industry. Psychiatrists working with clinical psychologists may contribute greatly to those aspects of human relations and behavior which have proved troublesome in our industrial civilization. Serious consideration, in fact, has already been given to the development of industrial medical clinics. They will provide conventional industrial procedure plus a diagnostic service which will supplement and make more effective the efforts of the worker's personal physician in the field of nonindustrial disorders.

Much interest is apparent by management and by labor regarding the extension of industrial medical services to include ordinary illness. Many variations in approach have been developed by such diverse industries as mining, shoe manufacturing, refining, ship construction and transportation. The Council on Industrial Health has taken the position that the principles on which medical care should be based have been defined by the House of Delegates of the American Medical Association. If medical care plans are in prospect, industry should be in agreement with the appropriate medical societies as to conformity of such plans with these established principles. Since these plans are essentially medical, the Council feels that policies should be directed and controlled by medical departments in industry.

INDUSTRIAL MEDICAL EDUCATION

The Committee on Postwar Medical Services has been inquiring into the postwar intentions of medical officers in the Army and Navy.[1] Out of over 20,000 questionnaires returned 4,215 officers indicated a desire for industrial medical practice, 863 of them full time. About one third of this group wanted special preparation. The questionnaire did not determine specifically the desire of these men for long or short courses; the impression is clear that university courses are preferred over training in industry itself.

According to a recent survey by the Council on Industrial Health, nine universities are prepared to supply advanced training in industrial health in schools either of medicine or of public health. Plans are maturing in a number of additional schools pending departmental organization, support or faculty assignments. These educational resources seem to be sufficient or susceptible of sufficient expansion to meet any immediate demand.

The Council on Industrial Health and the Council on Medical Education are jointly examining the whole industrial medical education structure in the expectation that suitable recommendations can be made for orderly development.[2] Full consideration will be given the details of undergraduate orientation, refresher and continuation courses, internships and residencies as well as fellowships or other long courses of a caliber similar to those demanded in other fields of graduate medical preparation for specialization.

SENATOR WAGNER'S COMMENTS

In the Organization Section in this issue of THE JOURNAL appears a second communication from Senator Wagner, commenting on the editorial and the condensation of his bill which appeared in THE JOURNAL, June 2. Because Senator Wagner occupies a position of importance in the legislative machinery of the United States government and because he has been persistent in his endeavor to force upon the American people a federal system of compulsory sickness insurance, THE JOURNAL prints in toto his comments on its editorial. Interpolated in his longer communication are a number of simple replies to the points that he raises. The Wagner-Murray-Dingell bill—1945 version—is 185 pages long. It is simply impossible, with the space available, to make the detailed line-by-line analysis of this proposal that will be necessary should it ever come to public hearings.

Almost coincidental with the introduction of this measure came another bill—Senate bill 380—developed by Senators Wagner, Murray, O'Mahoney and Thomas.

1. Lueth, H. C.: The Medical Officer and Future Industrial Medical Practice, J. A. M. A. **128**: 93 (May 12) 1945.
2. Bristol, L. D., and Peterson, C. M.: Industrial Health, J. A. M. A. **125**: 1106 (Aug. 19) 1944.

In his consideration of that measure Mr. Raymond Moley, editor of *Newsweek* Magazine, says "It is an old gag of Senator Wagner's to preface a bill with a bunch of rhetorical tripe called a declaration of policy. He knows, as a lawyer, that this preamble has no standing in court. But, as a politician, he knows that such stylistic flypaper snares votes and praise." The statement refers equally well to the long preamble developed by Senator Wagner for introduction to the Wagner-Murray-Dingell bill — 1945 version — and certainly applies to the letter published in this issue of THE JOURNAL. Mr. Moley concludes that "'full employment,' literally enforced, would mean the end of freedom for all classes of Americans."

It is the simple contention of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION that the Wagner-Murray-Dingell bill—1945 version—would also mean the end of freedom for all classes of Americans.

Current Comment

STRUGGLE OVER DOGS

Recently newspapers in Chicago have described another clash between the antivivisectionists and a Chicago medical school. Despite repeated hearings in which they always fail to establish their charges, the antivivisectionists continue to oppose the Chicago ordinance which requires the pound to deliver unclaimed dogs to the medical schools. Mrs. Charles M. Petkus, vice president of the Illinois Citizens Animal Welfare League, has been insisting that Northwestern University keeps its dogs under insanitary and filthy conditions. The Chicago *Herald American* has given much publicity to Mrs. Petkus' activities; other newspapers have treated the whole situation either with brevity or with mild derision. Investigations of Mrs. Petkus' charges have not sustained her claims. On June 12 Mrs. Petkus took a dog out of a cage during an inspection tour through Northwestern's animal rooms and attempted to carry the animal away. According to their story, Mrs. Petkus and two other women with her were resisted. One of Mrs. Petkus' companions was Mrs. Irene Castle McLaughlin. A lieutenant colonel of the Army Medical Corps, just returned from overseas service, makes the following comment in a letter published in the Chicago *Daily News* of June 18:

> This morning I returned to Chicago after more than forty months overseas, where I commanded a portable surgical hospital and a field hospital.
>
> Upon my arrival I bought my first *Daily News* in nearly four years. My attention was drawn to the article about Mrs. Irene Castle McLaughlin and her antivivisectionist friends interfering with Northwestern University's Dr. Ivy, an internationally famous physiologist and undoubtedly the benefactor, through his work, of many millions of people.
>
> I studied at Loyola University and was introduced to surgery in the vivisection laboratory. The surgery I practiced in Chicago and later on the front lines and the surgery practiced by the vast majority of both civilian and military surgeons was begun in the vivisection laboratory.
>
> There can be no dispute that surgery in this war is saving lives and limbs of thousands of servicemen who would die had their surgeons been less well trained—and had they not at least begun their training by vivisection.
>
> I believe the people of Chicago are entitled to know what Mrs. McLaughlin has done for the war effort that she thinks entitles her to interfere with the training of our surgeons.

PHYSICIANS AS CULTURAL ATTACHÉS

The suggestion has been made recently that the post of cultural attaché in the United States embassies, if it is to be maintained, should be extended to all countries, and that those who fill these posts be men or women of distinction in fields of higher intellectual or artistic endeavor. In discussing this matter Vaillant [1] points out the undeniable fact that a man who is not a physician is not able to estimate the abilities of members of the medical profession. Few physicians would care to make a career of being a "cultural attaché" and, as Vaillant says, the name itself would be a contradiction as a permanent job. A physician serving in this capacity, however, could perform a national service and would receive an instructive interlude of his usual professional activity. A physician who was appointed for one or two years as a cultural attaché doubtless would be expected to evaluate medical problems of the country in which he was stationed and the qualifications of physicians there. As an eminent physician himself, he should lend distinction to the embassy staff in the eyes of a large and influential professional group. Indeed, a physician attached to a United States embassy would often be in a position to render valuable service not only to his government but also to the country to which he was accredited. For the physician himself and for medicine in the United States such a practice would have much to recommend it. It would be an enriching experience for a man already established in medicine to spend one or two years doing responsible work in some other country. The return of physicians with their experience of medicine in other lands would help to counteract what Osler called chauvinism in medicine. If the State Department continues and extends the policy of the "cultural attaché" the appointment of some qualified physicians would be desirable.

HEPATITIS TRANSMITTED BY SYRINGE

In a period of two years, January 1943 to January 1945, 63 patients with diabetes who attended a clinic at the Royal Hospital in Sheffield, England, were diagnosed as suffering from hepatitis. Four patients died and 6 patients were left with evidence of residual liver damage. According to Droller,[1] the epidemiologic picture was complex. The cases of hepatitis arose both from contact between patients and from syringe transmission. There was, however, conclusive evidence that some of the cases resulted from contaminated syringes and this outbreak therefore demonstrates the possibility of the development of hepatitis by such means.

1. Vaillant, G. C.: Shadow and Substance in Cultural Relations, Scient. Month. **60**: 373 (May) 1945.
1. Droller, Hugo: An Outbreak of Hepatitis in a Diabetic Clinic, Brit. M. J. **1**: 623 (May 5) 1945.

MEDICINE AND THE WAR

ARMY

MERITORIOUS SERVICE AWARD

The AAF Regional Hospital, Truax Field, Wisconsin, was recently awarded the Meritorious Service Unit Plaque for "superior performance of duty and outstanding devotion to its assigned mission for the period Jan. 1, 1944 to Dec. 31, 1944."

COLONEL FLORENCE A. BLANCHFIELD AWARDED MEDAL

Col. Florence A. Blanchfield, superintendent of the Army Nurse Corps, was recently awarded the Distinguished Service Medal "for exceptionally meritorious and distinguished service as superintendent of the Army Nurse Corps from June 1943 to June 1945." The medal was presented to Colonel Blanchfield by General Brehon Somervell, commanding general, Army Service Forces. "The War Department has cause to be proud of the work done by army nurses," General Somervell said, "but I can pay no greater tribute to yourself and the women of the Army Nurse Corps than to tell you that, to a man, the American soldier appreciates the work and spirit of devotion with which army nurses throughout the world have carried on their duties." Colonel Blanchfield, whose home is at Shepherdstown, W. Va., entered the Army Nurse Corps in July 1917, serving overseas in the first world war with Base Hospital No. 27. She has been assigned to the Surgeon General's Office since 1935. As superintendent, she is responsible for one of the most important jobs of the war, that of establishing and maintaining efficient nursing care for the thousands of American sick and wounded soldiers all over the world. Colonel Blanchfield is the first army nurse to receive the Distinguished Service Medal in this war, although twenty-three were so honored in the first world war. The first American woman to receive the Distinguished Service Medal was Army Nurse Julia C. Stimson, May 26, 1919.

CONVALESCING VETERANS GET WAR DOGS

Veteran war dogs, those no longer suitable for combat because of over age and those not adaptable to scout duty, are being assigned to army convalescent hospitals as pet mascots for recuperating patients. If a hospitalized veteran soldier becomes attached to an individual dog, he may assume full ownership and take the dog home with him when he recovers and is released from service. Dogs given to the hospitals are those whose donors do not wish them returned, cannot be located or are willing to relinquish their claim to the dogs in favor of the convalescing soldier. The dogs have undergone retraining by the Quartermaster Corps at its War Dog Training Center, Fort Robinson, Neb., to remove all undesirable or aggressive traits acquired by reason of former training or combat duty. They have been given obedience training to reemphasize response to fundamental commands such as come, sit and stay.

Assignment of Medical Officers to Veterans Administration

June 20, 1945

Dr. Morris Fishbein,
Editor, The Journal,
Chicago.

Relative your telegram 14 June, in future Medical Corps officers will not be assigned to Veterans Administration unless they were previously employed by that agency or they specifically request such assignment.

KIRK
Office of the Surgeon General
Washington, D. C.

ARMY AWARDS AND COMMENDATIONS

Captain Rex D. Hammond

Capt. Rex D. Hammond, formerly of Chicago, was recently awarded the Bronze Star for meritorious achievement. He had been with the 76th Medical Battalion, United States Third Army, since the invasion of Normandy and more recently became medical administrator of the Buchenwald Prison Camp. Dr. Hammond graduated from the University of Illinois College of Medicine, Chicago, in 1941 and entered the service Sept. 22, 1942.

Captain William E. Grove

Capt. William E. Grove, formerly of Newton, Kan., was recently awarded the Bronze Star "for meritorious service in connection with military operations against the enemy from Oct. 20, 1944 to Feb. 10, 1945 during the Leyte Island operations. During the entire campaign of the Leyte invasion Captain Grove performed his surgical duties in a very exemplary and outstanding manner. In spite of enemy bombings and lack of proper facilities on many occasions Captain Grove carried on his work. His devotion to the wounded was a great comfort to all who came under his care. In addition, from the period Dec. 23, 1944 to Feb. 10, 1945 Captain Grove was commanding officer of the organization and carried on his extra administrative duties with great ability. To compensate for the absence of one medical officer Captain Grove gave unstintingly of himself and often worked as long as five to six days with little or no rest. His professional and administrative capabilities, in spite of adverse conditions, served as an inspiration for and gained the admiration of the officers and enlisted men under his command." Dr. Grove graduated from Northwestern University Medical School, Chicago, in 1940 and entered the service Sept. 13, 1941.

Captain Rudolph Berke

Capt. Rudolph Berke, formerly of New York, was recently awarded the Bronze Star and shortly after was awarded the Oak Leaf Cluster. Dr. Berke graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1930 and entered the service Sept. 16, 1942.

Captain Louie Goldberg

The Air Medal and one Oak Leaf Cluster was recently awarded to Capt. Louie Goldberg, formerly of Des Moines, Iowa, for service in air rescue of downed fliers. Dr. Goldberg graduated from the State University of Iowa College of Medicine, Iowa City, in 1936 and entered the service July 24, 1942.

Captain George L. Maison

The Legion of Merit was recently awarded to Capt. George L. Maison, formerly of Detroit. The citation accompanying the award read "for service from July 1942 to July 1944 as chief of the Acceleration Unit, Physiological Branch, Aero-Medical

Laboratory. He designed and developed the anti-G suit now used by A. A. F. fighter pilots to prevent blackout and to increase combat efficiency. This suit has had a beneficial effect in raising the score of enemy planes shot down by A. A. F. pilots. He demonstrated courage and forceful effort in developing this suit and demonstrating and instructing its use to the Eighth and Ninth Air Forces personnel." Dr. Maison graduated from Northwestern University Medical School, Chicago, in 1935 and entered the service April 16, 1942.

Major Ralph H. Riegelman

Major Ralph H. Riegelman, formerly of Des Moines, Iowa, was recently awarded the Bronze Star for "meritorious achievement as a group surgeon of a heavy bomb group and station surgeon of a station hospital in the North African and European theaters of operation from September 1942 to the present day. With no precedent to guide him and only limited personnel to work with, Major Riegelman established a most efficient station hospital to satisfy the many needs of an extensive combat operations program. By his diligence and devotion to duty he has successfully cared for the health of the group while operating from North Africa under adverse conditions. His skill, judgment, initiative, foresight and devotion to duty are most praiseworthy and reflect great credit on himself and on the armed forces of the United States." Dr. Riegelman graduated from the State University of Iowa College of Medicine, Iowa City, in 1936 and entered the service Dec. 12, 1940.

Captain Peter P. Baselice

The Bronze Star was recently awarded to Capt. Peter P. Baselice, formerly of New York, "for meritorious achievements in connection with military operations against the enemy at Sansapor, Dutch New Guinea and at ——, Philippine Islands, from Sept. 3, 1944 to March 20, 1945." Dr. Baselice graduated from the Royal University of Rome Faculty of Medicine and Surgery in 1935 and entered the service Aug. 18, 1942.

Major Ralph W. Wise

The French Croix-de-Guerre was recently awarded to Major Ralph W. Wise, formerly of Dallas Center, Iowa. The citation accompanying the award read, in part, "For exceptional services of war, rendered during the course of operations involving the liberation of France." Dr. Wise graduated from the State University of Iowa College of Medicine, Iowa City, in 1939 and entered the service Aug. 15, 1941.

Major Wayne C. Bartlett

Major Wayne C. Bartlett, formerly of Spearville, Kan., was recently awarded the Bronze Star for meritorious service. He has been overseas since August 1942, serving in an evacuation hospital as head of a surgical team. Dr. Bartlett graduated from Rush Medical College, Chicago, in 1931 and entered the service in May 1942.

Captain John H. Amesse

Capt. John H. Amesse, formerly of Denver, was recently awarded the Silver Star for gallantry in action during the Philippine Island campaign. In presenting this decoration, Brig. Gen. Hugh Hoffman of the 1st Cavalry Division stated that in each case this award is made by specific direction of the President. Dr. Amesse graduated from the University of Colorado School of Medicine, Denver, in 1941 and entered the service in July 1942.

MISCELLANEOUS

EIGHT AWARDED AMERICA TYPHUS COMMISSION MEDAL

Six army medical corps officers, one medical corps officer in the U. S. Naval Reserve and one officer in the sanitary corps were recently awarded the America Typhus Commission Medal. The recipients of the awards and the citations accompanying them include:

Col. Eugene W. Billick, formerly of Monongahela, Pa., who as chief surgeon, headquarters of the U. S. Army Forces in the Middle East, "rendered exceptionally meritorious service to the United States of America Typhus Commission by giving unstinted support to typhus research and control in the Middle East and the Balkans. His unfailing understanding of disease control and his ability to establish favorable liaison for the Typhus Commission with foreign governments and the armies of both the United States and Great Britain helped immeasurably in suppressing this fever throughout his sphere of influence. He also made available to the Typhus Commission in the winter of 1943-1944 personnel needed to combat an epidemic in Naples, Italy. His administrative actions and expert advice assisted materially in developing effective measures to prevent typhus in this theater of operations." Dr. Billick graduated from the University of Pittsburgh School of Medicine in 1925 and entered the service July 1, 1942.

Col. William L. Wilson, formerly of Washington, D. C., "performed exceptionally meritorious service in connection with the work of the United States of America Typhus Commission from September 1942 to May 1945 by giving valuable assistance and advice on numerous problems of policy, organization and operation. His wise counsel and excellent staff work greatly strengthened the commission. As deputy director of Public Health Section G-5, Supreme Headquarters, Allied Expeditionary Force, he influenced development of extensive plans for typhus control in northwestern Europe, particularly among refugees and displaced persons. He assisted materially in reducing the incidence of this disease." Dr. Wilson graduated from Baylor University College of Medicine, Dallas, Texas, in 1926 and entered the service Aug. 3, 1927.

Lieut. Col. Edward S. Murray, formerly of Cedar Rapids, Iowa, in Turkey in 1943-1944, in Egypt in 1944 and in Yugoslavia in 1945 "performed exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. He had a prominent part in organizing and applying typhus control programs beneficial to those countries, and by scientific investigations he contributed to medical knowledge of typhus fever. In difficult and dangerous situations he steadfastly adhered to the plans of the commission and carried out projects on a national scale with energy, intelligence, tact and high professional competence. His performance of duties was characterized by breadth of understanding and capacity to deal successfully with large problems." Dr. Murray graduated from the State University of Iowa College of Medicine, Iowa City, in 1938 and entered the service Aug. 20, 1941.

Major William A. Davis, formerly of New York, both as a civilian and as an officer "performed exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. In the winter of 1943-1944, while a staff member of the Rockefeller Foundation Health Commission, he gave valuable assistance in suppressing the typhus epidemic in Naples, Italy. After being commissioned he served as liaison officer representing the Typhus Commission with the 21st Army Group (British) from November 1944 to May 1945. In this position he assisted in formulating policy and organizing programs and participated in typhus control operations under campaign conditions in Belgium, the Netherlands, the Rhineland and at prison camps in Germany. His intelligent, energetic and professionally competent services were of great value to the Allied Expeditionary Forces in the enforcement of typhus control measures which reduced the incidence of this disease among refugees and displaced persons." Dr. Davis graduated from Harvard Medical School, Boston, in 1939.

Major Robert S. Ecke, formerly of Brooklyn, "performed exceptionally meritorious service in connection with the work of the United States of America Typhus Commission in several foreign countries. After successfully evaluating vaccination against typhus in Egypt in 1943 he helped control this disease among refugees in southern Italy during the 1943-1944 epidemic in Naples. Later in 1944 he carried out a valuable typhus survey and control program in the Aden Protectorate. In

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June 1944 he made a survey of relapsing fever in the Anglo-Egyptian Sudan and in September 1944 a typhus survey in Ethiopia, each of which formed the basis for important decisions. During the spring of 1945 he pioneered typhus control in Yugoslavia. By his investigations he contributed new knowledge of typhus fever. Through constant and devoted service in situations requiring initiative and judgment he materially assisted in reducing the incidence of this disease." Dr. Ecke graduated from Johns Hopkins University School of Medicine, Baltimore, in 1935.

Major Chris J. D. Zarafonetis, formerly of Grand Rapids, Mich., "conducted investigations in the laboratory of the America Typhus Commission at Cairo, Egypt, during 1943-1944 which have increased the knowledge of immunity following vaccination against typhus. His researches contributed to development of improved methods of treating epidemic and scrub typhus. In July 1944 he made a survey of plague and typhus at Dakar and assisted in reducing the risk of infection of American troops. He has participated in pioneering work of control in Yugoslavia. From December 1944 to February 1945 he alone represented the commission in Greece, occupying a position of great responsibility in a military mission. Under the hardships of a civil war and at risks to his personal safety he carried out surveys and, in cooperation with local authority, formulated plans and procedures for typhus control. His service in Greece was an outstanding achievement." Dr. Zarafonetis graduated from the University of Michigan Medical School, Ann Arbor, in 1941 and entered the service July 1, 1942.

Lieut. Stafford M. Wheeler, M. C., U. S. Naval Reserve (posthumous), formerly of Boston, in Egypt during December 1944 and January 1945 and later in Yugoslavia "displayed special fitness for the work of the United States of America Typhus Commission. With other officers he was sent by the commission to Yugoslavia in February 1945 to assist in organizing and operating a typhus control program for that country. In difficult situations, under campaign conditions, he performed his duties with a high degree of intelligence, initiative and efficiency until killed at his work by the explosion of a land mine. He contributed materially to the advancement of the commission's typhus control program." Dr. Wheeler graduated from Harvard Medical School, Boston, in 1937.

Lieut. Col. Emory C. Cushing, Sanitary Corps, formerly of Arlington, Va., from 1942 "demonstrated unusual ability in developing and applying modern methods of typhus control. Drawing on his wide knowledge and experience, he gave expert advice on programs dealing with typhus control both for military personnel and among displaced persons and refugees. During 1944 and 1945 in the French and German campaigns he vigorously carried out disease control plans which he had helped formulate at an earlier date. His application of typhus control measures contributed greatly to a general reduction of the risks of infection in the western European combat zone."

CONTAGIOUS DISEASES AMONG DUTCH CHILDREN

A special release from the Netherlands Information Bureau states that infectious diseases due to malnutrition are continuing to take their toll among the children of the Netherlands. Thousands of youngsters are suffering from tuberculosis, dysentery and diphtheria, and the already overcrowded hospitals are unable to cope with the unprecedented demands on their services. Owing to the difficulty of obtaining nourishing foods in the western part of the Netherlands, tuberculosis is prevalent. Diphtheria and various skin diseases, including scabies, are particularly prevalent among babies and children under 4. Medical officials are doing all they can to fight disease, but they are hampered by a severe shortage of medicines, ointments, bandages and instruments. Even baby bottles, disinfectants and ingredients for such simple remedies as cough syrup are unavailable. Another handicap is the lack of sanatoriums for the hospitalization of tuberculosis victims. Doctors fear that home nursing of tuberculous patients may spread the disease to the rest of the population. In order to check any increase of various disease, repatriates from the concentration camps in Germany must undergo a strict physical examination, including a thorough delousing process, to prevent any possible typhoid epidemic. Furthermore, all of them are under obligation to take an x-ray examination for tuberculosis one week after their return to civilian life.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL June 9, page 447)

ILLINOIS

Belmont Community Hospital, Chicago. Capacity, 125; admissions, 4,180. Mrs. Gertrude F. Scofield, Superintendent (interns, July and October 1945, January 1946).

KANSAS

Wichita Hospital, Wichita. Capacity, 157; admissions, 3,888. Sister M. Agnes, Administrator (interns, July and October).

MICHIGAN

Kalamazoo State Hospital, Kalamazoo. Capacity, 3,380; admissions, 542. Dr. R. A. Morter, Medical Superintendent (2 residents—psychiatry).

NEBRASKA

Creighton Memorial St. Joseph's Hospital, Omaha. Capacity, 501; admissions, 11,812. Dr. C. M. Wilhelmj, Dean, Creighton University School of Medicine (resident—pathology).

NEW JERSEY

Orange Memorial Hospital, Orange. Capacity, 439; admissions, 8,103. Mr. F. Stanley Howe, Director (intern).

PENNSYLVANIA

Uniontown Hospital, Uniontown. Capacity, 230; admissions, 5,563. Mr. John Farrell, Superintendent (interns).

UTAH

Thomas D. Dee Memorial Hospital, Ogden. Capacity, 400; admissions, 8,405. Mr. Lawrence H. Evans, Superintendent (interns).

CHILEAN ORDER OF MERIT

Col. Harold B. Gotaas, director of the Division of Health and Sanitation, Institute of Inter-American Affairs, was recently decorated by the Chilean government with the Order of Merit. Before joining the army in 1942 Colonel Gotaas was professor of sanitary engineering of the School of Public Health, University of North Carolina.

VETERANS ADMINISTRATION HOSPITAL IN PITTSBURGH

The Veterans Administration announced recently that President Truman has authorized construction at Pittsburgh of a 1,200 bed general medical and surgical hospital on a 13 acre site adjacent to the University of Pittsburgh. When the hospital is completed, the Aspinwall Hospital outside Pittsburgh will be converted into a tuberculosis hospital.

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

Following an appeal from the Maritime Hospital at Toulon, France, the Medical and Surgical Relief Committee of America (420 Lexington Avenue, New York 17) recently sent a supply of radium. In addition, the hospital received more than $5,000 worth of material from the committee, including an ambulance, penicillin and assorted medical and surgical supplies.

OCCUPATIONAL THERAPY EXPANSION

Between May 16 and 31 twenty-nine emergency course apprentices from Mills College, Calif., were assigned to hospitals for clinical training in occupational therapy. Seventy students were assigned to the War Emergency Course starting June 1 at Milwaukee Downer College, Milwaukee, and seventy-five enlisted women were assigned to occupational therapy assistants courses at Halloran General Hospital.

ORGANIZATION SECTION

THE WAGNER-MURRAY-DINGELL BILL

Senator Wagner Comments on The Journal Editorial Concerning the Wagner-Murray-Dingell Bill—1945 Version

(Following is a letter sent by Senator Wagner of New York to the editor of The Journal together with interpolated comment:)

To the Editor:—THE JOURNAL on June 2 published an editorial on the Wagner-Murray-Dingell bill. I should like to comment on this editorial.

In the last paragraph of your editorial it is stated that I have "not consulted with the American Medical Association." The fact is that I *did* consult the American Medical Association. On Dec. 7, 1944, I addressed a letter to Dr. Olin West, Secretary and General Manager of the American Medical Association, listing a series of suggestions for the revision of the 1943 bill and inviting the Association to comment on these proposals. In Dr. West's reply to me of December 15 he said that he was not in a position to enter into a discussion of the proposals which I submitted; that any comment he might be disposed to make would be only in the nature of a personal opinion; that only the House of Delegates is in a position to commit the Association. He enclosed certain principles adopted by the House in June 1944.

In all discussions of the Wagner-Murray-Dingell bill by the House of Delegates, Dr. West said, it has been clearly evident that the members think "federalization of medical service" or "the subjection of medicine to political domination" would result in deterioration of quality and in lowering professional standards. Since the bill does not propose "federalization of medical service" or "the subjection of medicine to political domination," this was not pertinent or very helpful. Dr. West then said he was forwarding a copy of my letter to various elected officers and members of official bodies of the Association (whom he listed). In the five months which followed, prior to May 24, when the bill was introduced, neither Dr. West nor any other officer of the Association submitted any comments nor was there any indication on the part of the officers of the Association of a willingness to consult with me or my colleagues.

(This portion of letter was submitted to Dr. Olin West, Secretary of the American Medical Association, who replies:)

***To the Editor:*—On Dec. 11, 1944 I received a letter from Senator Wagner in which it was stated that he had received numerous suggestions for changes and broadening of the health insurance provisions of the Wagner-Murray-Dingell bill. There was submitted in the letter "a list of the most important suggestions I have received." The final paragraph of Mr. Wagner's letter read as follows: "I should appreciate having your comments on these suggestions as soon as possible, preferably within the next ten days."**

In my reply I informed Mr. Wagner that I did not feel that I was in a position to enter into a discussion "of the proposals for changing and broadening the health provisions of the Wagner-Murray-Dingell bill," since any comment that I might be disposed to offer would be purely in the nature of personal opinion. I stated that the House of Delegates of the American Medical Association is its policy making body and that only the House of Delegates is in a position to commit the American Medical Association with respect to legislation of such great importance to the public and to the medical profession as the Wagner-Murray-Dingell bill. I further stated that in the discussions of the Wagner-Murray-Dingell bill at meetings of the House of Delegates previously held it had been clearly evident that the members of that body, representing fifty-four constituent state and territorial medical associations, were convinced that federalization of medical service in the United States or the subjection of medicine to political domination would result in bringing about deterioration of the quality of medical service and would lower professional standards which the American Medical Association for nearly one hundred years has attempted to establish and maintain on the highest possible plane.

I informed Mr. Wagner that a copy of his letter addressed to me had been sent to the elected officers of the Association, to the members of the Board of Trustees and to the members of the Council on Medical Service and Public Relations. I sent Mr. Wagner a copy of the principles adopted by the House of Delegates of the American Medical Association in June 1944. It did not occur to me that Mr. Wagner intended that his letter to me should be considered as a request for a statement representing the policy of the American Medical Association, and even had I believed his letter to be of that nature I should not have presumed to speak for the Association. The letter merely asked for comments on certain proposals, it did not suggest or invite a conference.

Olin West.

(Senator Wagner continues:)

On numerous occasions over the past ten years the American Medical Association has been urged to put forward constructive proposals to deal with admitted needs for health and medical services in the United States. In 1934, while members of the American Medical Association staff were working with the government's staff, even before a government report could be made, the Association called a special meeting of the House of Delegates and adopted policies condemning health insurance proposals *before* they were made. In 1938 at the National Health Conference the President of the American Medical Association promised the cooperation of the Association; but no constructive proposals were forthcoming. Since then—up to the introduction of the Hill-Burton hospital construction bill—the Association has condemned every proposal which had a chance to deal with our large national needs on an adequate basis.

I say this not in criticism or to rake over old ashes, but only to point out that there is a long record of attempts to cooperate with the Association and that those who have made such attempts have always been met with rebuffs. Nevertheless, let me repeat the assurance that I am willing—as I always have been—to consult with the Association at any time.

Comment.*—Senator Wagner and the representatives of the Social Security Board have queer ideas of consultation and cooperation. From the first they have insisted on federal compulsory sickness insurance as the only answer to the problem of medical care. They refuse to listen to any other proposals or to modify in any way the proposals developed through the Social Security Board and introduced by the Senator.—*Ed.

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(Senator Wagner continues:)

Your editorial disparages the importance of two medical groups which consulted with me. One group, the Physicians' Forum, you dismiss with the charge that they are several hundred physicians "mostly inclined toward communism!" This brings to mind your editorial of Dec. 3, 1932 condemning the Majority Report of the Committee on the Costs of Medical Care as "socialism and communism—inciting to revolution." This charge was made about a report—mainly recommending *voluntary* health insurance—which was prepared under the chairmanship of Dr. Ray Lyman Wilbur, president of Leland Stanford University and a former President of the American Medical Association. At the time he signed the report, Dr. Wilbur was Secretary of the Interior in President Hoover's cabinet.

Comment.*—The American Medical Association through its House of Delegates has repeatedly shown its willingness to modify its point of view by accepting various technics for spreading the costs of medical service, such as hospitalization insurance, insurance against catastrophic illness and even insurance against illness in toto. Apparently the House of Delegates has only required the submission of actual evidence based on trial that such technics represented sound insurance practice and were conducted along lines which would insure a high quality of medical service without destroying those factors essential for maintaining medical advancement. This is in contrast with the proposals of Senator Wagner, which have invariably demanded that the entire nation be placed at one time under a single system and that system always a federal compulsory sickness insurance system.—*Ed.

(Senator Wagner continues:)

Your editorial says that our bill "would take over the proposals of the Hill-Burton bill for hospital and health center construction and make of it a ten year program at ten times the cost. This is long term planning with a vengeance, in view of the experimental character of the proposal, at best." The facts, as any one can verify by reading the bill, are as follows: The Hill-Burton bill authorizes the appropriation of $100,000,000 for construction purposes during the first fiscal year; our bill proposes one half as much, or $50,000,000, for the first year. The Hill-Burton bill authorizes that there be appropriated for each fiscal year thereafter a sum sufficient to carry out the purpose. This means an authorization of an unlimited amount for an unlimited number of years. Our bill, on the other hand, authorizes a *maximum* of $100,000,000 a year only for each of the nine years after the first year. Thus, your statement about our bill was totally incorrect.

Comment.*—The most significant factor in the Hill-Burton bill is its proposal to grant funds only on demonstration of existing need and on the ability of the community to maintain a high quality of medical service under local administration and control. Grants are made only to the limit of existing needs. The Wagner-Murray-Dingell bill, 1945 version, authorizes a maximum of $100,000 000 a year for nine years. How many instances are there in which federal agencies with an authorized maximum of $100,000,000 for spending have failed to utilize the maximum?—*Ed.

(Senator Wagner continues:)

In the same paragraph you say that the new Wagner-Murray-Dingell bill also proposes to extend the grants for the venereal disease and tuberculosis programs. No such extension is contained in our bill. On these two programs our bill merely repeats the existing provisions of section 314 of the Public Health Service Act with only such editorial changes as were necessary to make clear that our proposals for expanded public health work do not change the venereal disease and the tuberculosis programs.

Comment.*— Conceivably continuous improvement in the attack on venereal disease and on tuberculosis will lessen the total expenditures required for these purposes. Is it necessary then to extend existing grants indefinitely?—*Ed.

(Senator Wagner continues:)

Your editorial makes extensive use of questions raised by an editorial on our bill in the New York *Times* for May 26. How many times have I seen your columns inveigh against the views and comments on health programs advocated by the editorial columns of that newspaper! More important, however, it is unfortunate that you fall into the same errors as the *Times*. One would gather from your comment that an unemployed worker under our proposals would only have to appear at an office and demand an unemployment check. The fact is that existing unemployment insurance laws require—and our bill requires—that an unemployed worker eligible for unemployment benefits must register at an employment office each week and that he becomes entitled to benefits only if the employment service is unable to offer him suitable employment. The bill specifically provides that he is disqualified from receiving his benefits if he refuses to accept suitable employment. You also repeat the error that "the old age benefits in some instances would pay a man more for retiring than for continuing at his job." The fact is that our bill includes the 80 per cent maximum contained in the present law, and that a man cannot receive as much on retiring as he has ordinarily earned in covered employment (see page 132, line 19, of the bill).

Comment.*— Expert economists and accountants are having difficulty in interpreting the Senator's estimates and his tables. In the *Congressional Record*, May 28, 1945, page 530, he himself introduced some corrections of errors in his tables. Practically all authorities are convinced that the sums to be spent under this bill are far beyond the 8 per cent tax on the payroll that the bill proposes. This the Senator freely admits, stating that the total amount will be made up from general taxes. Referring specifically to Senator Wagner's comments in this paragraph, is it not the maximum government control over the individual to suggest that a worker will not be entitled to his benefits under unemployment insurance unless he takes a job that a federal government agency offers him? Will the workers of this country be willing to accept that type of dictation?—*Ed.

(Senator Wagner continues:)

Finally, I want to comment on the closing sentence of your editorial. You refer to "obstinacy" typical of the manner in which my colleagues and I have tried "to impose their notions regarding the care of the public health and the sick on the people of the United States." This statement appears at the close of the same paragraph which made mention of several organizations which have endorsed the bill. Many millions of people are members of those organizations, and many tens of millions of people are represented by them and their families. When they endorse legislation, is it still only the sponsors of the bill who are trying to "impose their notions?" The facts do not square with your assertion.

It is evident from the results of numerous polls and from the many thousands of letters written to me and to my colleagues that the American public is in favor of health insurance. I feel that the American Medical Association has the opportunity to render a great public service in this field. I hope that instead of pursuing a negative policy you will join with those of us who are trying to find constructive solutions to one of America's basic problems.

ROBERT F. WAGNER,
United States Senate, Washington, D. C.

Comment.*—As has already been mentioned, various state and county medical associations are now participating in trials of various technics with the hope that suitable methods can be found. This is the very opposite of obstinacy. Senator Wagner and the Social Security Board, however, have never admitted any possible answer to the problem of medical care except a federal compulsory sickness insurance system. This is the apotheosis of stubbornness and obstinacy and with it a complete lack of willingness to confer, to consult or to reason.—*Ed.

Washington Letter

(From a Special Correspondent)

June 25, 1945.

National Advisory Health Council Reviews Its Work

Present and postwar plans of various public health service divisions were reviewed at the first meeting of the National Advisory Health Council to be held since passage of the Public Health Service Act of 1944, which was called in Wilson Hall at the National Institute of Health, June 19 and 20. The council, which serves in an advisory capacity to Surgeon General Parran, also considered recommendations to meet existing conditions resulting from the war. The National Institute of Health took up extension of grants-in-aid for additional research and methods of assistance to young scientists through fellowships, and reported on the work of the institute and laboratories. The Office of the Surgeon General explained the work of the engineering division and discussed plans to have adequately trained public health personnel for the nation. Reviews were heard from the National Cancer Institute, Division of Infectious Diseases, Division of Physiology, Biologics Control Laboratory, Chemistry Laboratory, Pathology Laboratory, Zoology Laboratory and Industrial Hygiene Research Laboratory. The Bureau of Medical Services presented statements from the Division of Mental Hygiene, the Foreign Quarantine Division, the Interservice Committee for the Control of Exotic Diseases and the International Health Relations Section. Reports were also heard from the Bureau of State Services encompassing the State Relations Division, Venereal Disease Division, Tuberculosis Control Division and Public Health Nursing. Dr. Parran heads the council, which consists of Alphone R. Dochez, professor of medicine, Columbia University College of Physicians and Surgeons; Clarence C. Selby, medical consultant, General Motors, Detroit; Kenneth F. Maxcy, professor of epidemiology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore; Alfred C. Reed, associate clinical professor of medicine, Stanford University School of Medicine, San Francisco; John H. Musser, professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans; Henry F. Vaughan, dean, school of Public Health, University of Michigan, Ann Arbor; Harry S. Mustard, professor of public health practice, Columbia University College of Physicians and Surgeons, New York; Gordon M. Fair, professor of engineering, Harvard University, Cambridge, Mass.; Carl S. Marvel, professor of organic chemistry, University of Illinois, Urbana; William C. Rose, professor of biochemistry, Department of Chemistry, University of Illinois; Capt. T. J. Carter (MC), U.S.N., chief, division of preventive medicine and surgery, Navy Department, Washington, D. C.; Brig. Gen. Stanhope Bayne-Jones, director of the United States of America Typhus Commission, Office of the Surgeon General, Washington, D. C.; Harry W. Schoening, assistant chief, Bureau of Animal Industry, Department of Agriculture, Washington, D. C., and Asst. Surg. Gen. R. E. Dyer, director, National Institute of Health, Bethesda, Md.

Eisenhower Lauds Work of Medical Officers in War

Tribute to medical officers in the war was paid by General Eisenhower at his news conference in the Pentagon Building on his arrival in Washington last Monday. He was asked the question "Would you like to make a statement regarding the work of the medical officers in this war?" He replied "Well, the medical officer as an individual I can't say much about. I can talk about the medical service. I think the best way to measure it is the percentage of fatalities that come out of your wounded, and it has been cut more than half, less than 50 per cent what it was in the other world war. I think for a long time we were running 33 per cent, but it has been brought about, I think, largely, first, by better organization of the medical service and, second, by the addition of the sulfonamide drugs and penicillin and the use of blood plasma and whole blood. If I could reach all America there is one thing I would like to do—thank them for blood plasma and whole blood. It has been a tremendous thing. These are the things, I believe; that and one other factor—air evacuation. We have evacuated almost every one from our forward hospitals by air, and it has unquestionably saved hundreds of lives—thousands of lives."

Criticism of Overoptimistic Publicity on Amputation Cases

The Army has been accused of giving too glowing a picture in its publicity on the ease with which soldiers who have undergone amputation are fitting back into civilian life with artificial limbs. Soldiers are reported to have found that the newly designed artificial legs and arms are better than the old ones, but not a great deal better. The claim is made that the new "miracle hand" is not being made in large enough quantities and that many men are on the waiting list. Veterans are finding that it is a long tedious process to learn to use their new limbs. It is also stated that the newest developments are not satisfactory if a soldier has lost an elbow or a knee. A considerable number of men are disclosed to have become impatient with their appliances after discharge and on return home have bought other types of artificial limbs from small shops that have sprung up.

One curious outcome of all the optimistic publicity on the dexterity of amputees is the bill introduced by Senator Langer, Republican of North Dakota, to require every major league baseball club to have at least 10 per cent of men who have lost one or more limbs. In view of this situation on soldier attitude toward artificial limbs, critics say that the matter is a psychologic problem.

Slight Increase in Infantile Paralysis

With no signs of an epidemic, infantile paralysis cases have increased slightly throughout the United States. The total number of cases for the week ended June 16 was 99, which is 4 more than for the previous week and 25 more than for the same week last year. Fear of an epidemic led Texas to ask U. S. Public Health Service aid, and Dr. A. G. Gilliam was sent to Houston, where during the week of June 9 10 cases with two deaths were reported. The state's total for the week of June 9 dropped to 37 the week of June 16, and Houston had only 8 cases the following week. Since January 1 999 infantile paralysis cases have been reported in the nation, as compared with 657 in the same time in 1944.

Patenting of Earth-Dwelling Molds Related to Penicillin

Extracts from earth-dwelling molds related to penicillin are covered in patents just issued. One compound, known as actinomycin, together with a method for extracting it, is the subject of two U. S. patents assigned to Merck and Company, which pharmaceutical firm has been active in the production of

penicillin. The patent on the mold chemical, number 2,378,876, was taken out by Prof. Selman A. Waksman of Rutgers University and Dr. Harold B. Woodruff, Merck scientist. Actinomycin, as they call it, is a red substance left after a mold known as Actinomyces antibioticus has been subjected to ether extraction and the extract then evaporated. It can be chemically separated into two fractions, designated respectively A and B. Actinomycin A is stated to be powerful in its action against certain micro-organisms. The patent covering an improved method for extracting actinomycin A was number 2,378,449, issued to another Merck employee, Dr. Max Tishler.

President Proclaims National Farm Safety Week July 22-28

President Truman has proclaimed National Farm Safety week, July 22-28, to give every farm family in the country a safety check-up. Maynard H. Coe, director of the Farm Division of the National Safety Council, suggested that individuals and organizations center their attack on falls. These, he said, occur in the farm home more frequently than any other type of accident; on burns, which usually rank about second, and on educating farm workers in the proper handling of machinery, animals and firearms. Farm leaders who have pledged their cooperation include Edward S. O'Neal, president of the American Farm Bureau Federation, James G. Patton, president of the National Farmers' Union, and A. S. Goss, master of the National Grange.

General Hines Honored for Twenty-Two Years' Service to Veterans

Veterans Administrator Hines was to be honored June 26 for his twenty-two years of service to war veterans at a testimonial dinner in the Hotel Statler arranged by the Disabled American Veterans. In 1923 General Hines was appointed director of the Veterans Bureau. Since then he has served either as director of the Veterans Bureau or administrator of Veterans Affairs, which office came into being in 1930. General Hines has supervised construction of hospitals and homes involving an expenditure of approximately $180,000,000 and during his time in office has directed the disbursement of more than $15,000,000 in veterans' benefits.

The Veterans Administration now has 46,071 employees and operates ninety-four hospitals, homes and facilities and ten regional offices throughout the United States and its possessions.

World Health Decisions Hinge on New World League Charter

Authorities state that vitally important decisions concerning medical and health problems the world over hinge on the successful completion of a charter for a new world league at San Francisco. A steering committee of all conference delegation chiefs accepted the charter as pieced together by conference experts. The decision was made on May 1 that in this final plenary session there would be no discussion or statement on the substance of approved texts.

Ample Penicillin Is Reported Available Since WLB Release

Some communities report that ample supplies of penicillin are now available for those needing it, since the War Production Board released approximately 885,000,000,000 units for civilian distribution after March 15.

Capital Notes

A bill to provide $1,300,000 for improvements at the Columbia Hospital for Women, 80 year old Washington institution, will be introduced in the Senate by Senator Radcliffe, Democrat of Maryland.

Surg. Gen. Thomas Parran of the U. S. Public Health Service continues an appeal for U. S. Cadet Nurse Corps recruits "to meet civilian health needs."

Medical Legislation

MEDICAL BILLS IN CONGRESS

Penicillin

The House has passed H. R. 3266, the bill providing for the certification of batches of drugs composed wholly or partly of any kind of penicillin or any derivative thereof. This bill is similar to the existing law safeguarding the purity of insulin.

G. I. Bill of Rights

Senator Pepper, Florida, has introduced S. 1176, proposing to amend the Servicemen's Readjustment Act of 1944 with respect to the education and training of veterans. Among other changes, this bill would (1) make benefits available regardless of whether or not education was impeded, delayed, interrupted or interfered with by reason of his entrance into service; (2) remove the requirement that the educational course shall be initiated not later than two years after discharge or termination of the war; (3) remove the distinction between veterans over 25 years at the time of induction and those under this age; (4) add special provisions for qualifying veterans who wish to complete preprofessional and professional courses of education, extending the maximum benefit to seven years regardless of length of service; and (5) increase the monetary dependency benefits to veterans obtaining education.

Another bill, H. R. 3536, introduced by Representative Rankin, Mississippi, proposes to revise generally the Servicemen's Readjustment Act of 1944.

National Neuropsychiatric Institute

Senator Pepper, Florida, for himself and Senator Thomas, Utah, Senator Tunnell, Delaware, Senator Hill, Alabama, Senator Murray, Montana, Senator LaFollette, Wisconsin, and Senator Aiken, Vermont, has introduced S. 1160 to provide for, foster and aid in coordinating research relating to neuropsychiatric disorders, to provide for more effective methods of prevention, diagnosis and treatment of such disorders and to establish a National Neuropsychiatric Institute in the United States Public Health Service. The co-authors of this bill are members of a standing committee of the Senate Committee on Education and Labor which has been created to consider proposed legislation on health.

Dental Care

The Senate has passed S. 715 to provide more efficient dental care for the personnel of the United States Navy. The purpose of this bill is to reorganize the Bureau of Medicine and Surgery so as to provide for greater integrity of the dental service of the Navy. It would direct that this reorganization be consummated within six months.

The bill removing the limitation on the right to command of officers of the dental corps of the Army which limits such officers to command in that corps, S. 916, has passed the Senate and House.

Scientific Research

The House has passed H. R. 3440, proposing an appropriation not to exceed $8,000,000 for each fiscal year to enable the National Academy of Sciences, through a research board for national security consisting of representatives of the Army and of the Navy and civilians of outstanding accomplishments to provide for scientific research and advancement determined by the board to be desirable in the interest of national security.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

State Medical Election.—Dr. Henry King Wade, Hot Springs National Park, was chosen president-elect of the Arkansas Medical Society at a meeting of the council in Little Rock, April 22, and Dr. Charles A. Archer, DeQueen, was installed as president. Other officers include Drs. Richard C. Dickinson, Horatio, DeVeaux L. Owens, Harrison, and Frederick W. Hames, Pine Bluff, vice presidents, and Paul L. Mahoney, Little Rock, treasurer. Dr. William R. Brookscher, Fort Smith, secretary of the society, was chosen delegate to the American Medical Association and Dr. Edward E. Barlow, Dermott, was also chosen delegate, succeeding the late Dr. Sidney J. Wolfermann, Fort Smith.

CALIFORNIA

Executive Director Named for Physicians Service.—Mr. William M. Bowman, who has been assistant executive director in charge of the Los Angeles office of the California Physicians Service, has been appointed executive director of the state group.

Institute in Public Health Statistics.—The University of California School of Public Health and the state department of public health cooperated in an institute in public health statistics, June 18-30. The institute, which was held on the Berkeley campus, was designed to "acquaint participants with the legal and medical aspects of vital statistics, registration procedures and the simpler technics of public health statistics." Eschscholtzia L. Lucia, Ph.D., associate professor of biometry at the university, was director of the sessions.

COLORADO

Industrial Hygiene Newsletter.—The division of industrial hygiene of the University of Colorado School of Medicine, Denver, has recently begun the publication of a newsletter to serve as a clearing house for information on industrial health matters for Rocky Mountain industrial groups.

CONNECTICUT

Personal.—Dr. Robert E. Peck has resigned as director of the department of physical therapy at Grace Hospital to make his home in Dunbarton, N. H. He was guest of honor at a dinner given at the New Haven Medical Association April 28. His resignation concludes twenty-six years' association with the hospital.

First Case of Leprosy Since 1927.—On May 21 the bureau of preventable diseases of the Connecticut State Department of Health announced the discovery of the first case of leprosy in Connecticut since 1927. The patient, who was being sent back to Jamaica and who was working on a farm in Granby under the War Food Administration program, is said to have had the disease before coming to the United States.

DELAWARE

Society News.—The New Castle County Medical Society of Delaware was addressed May 15 by Dr. Sylvester W. Rennie, Wilmington, on "Thermal Burns."

State Social Hygiene Group Formed.—The Delaware State Social Hygiene Association was recently organized with Arthur D. Maybee, chairman of the Wilmington Safety Council and director of the Blue Cross Hospital Cooperative Plan, as president. Other officers include Dr. Arthur Parker Hitchens, Wilmington city health officer, Dr. Edwin Cameron, Dover, executive secretary, state board of health, and Dr. James Beebe, Lewes, vice presidents; Taggart Evans, executive secretary, Delaware Tuberculosis Association, secretary, and Pierre S. Du Pont III, treasurer.

DISTRICT OF COLUMBIA

Scientific Assembly Canceled.—The seventeenth annual scientific assembly of the Medical Society of the District of Columbia, scheduled for October 1-3, has been canceled.

IOWA

Outbreak of Ringworm of the Scalp.—On May 28 there were 235 cases of scalp ringworm reported in Davenport, according to the Davenport *Times*.

Course on Tropical Medicine.—A short course on tropical medicine will be conducted at the State University of Iowa College of Medicine, Iowa City, July 23-28, under the auspices of the state department of health.

Personal.—Dr. Max L. Durfee, health director at Iowa State Teachers College, Cedar Falls, since 1939, has resigned to accept a position as director of health service at the University of Oklahoma, Norman, effective July 1.

Physician Honored.—The Kiwanis distinguished service medal for 1944 was recently awarded to Dr. Allen C. Starry, Sioux City, for his work as director of laboratory work of the four Sioux City hospitals and as acting health director at the time of the flood in Sioux City early in the summer of 1944. The presentation of the medal was inaugurated by the Kiwanis Club in 1922, and its rule provides that no Kiwanian may accept the medal or serve on the award committee.

KANSAS

The Root Lecture.—Dr. Lewis J. Moorman, Oklahoma City, gave the annual William W. Root Lecture of the Alpha Omega Alpha Society, May 3, at the University of Kansas School of Medicine, Kansas City. His subject was "Tuberculosis and Genius."

Public Health Election.—Dr. William Fred Mayes was chosen president-elect of the Kansas Public Health Association during its meeting in Topeka, May 21-22; Paul D. Haney, director, state division of sanitation, was installed as president. Evan Wright, director, food and drug division, state board of health, is the secretary. All are in Topeka.

Changes in Health Personnel.—Recent changes among the health officers in Kansas include the transfer of Dr. Marion Friedman, Columbus, from Cherokee County to St. Louis County, Mo., Dr. John C. Ulrey, St. John, to succeed Dr. Charles S. Adams in Stafford County and Dr. Adelbert L. Suwalsky to succeed Dr. Alonzo R. Adams as city health officer of Leavenworth.——Dr. Laurence S. Nelson, Salina, has been appointed to a three year term on the Kansas State Board of Health, succeeding Dr. Gilbert A. Leslie, McDonald, who recently moved to Colorado (THE JOURNAL, March 4, p. 723). ——Dr. Clara R. Johns, Topeka, was recently appointed health officer of Johnson County.

KENTUCKY

Changes in Health Officers.—Dr. Martin H. Skaggs has resigned as health officer of Shelby County, effective June 1, to enter private practice in Taylorsville.——Dr. Edwin Bruce Underwood, Morganfield, has been appointed director of the Henderson County health department, succeeding Dr. Edwin W. Sigler (THE JOURNAL, April 28, p. 1138).

Distinguished Service Award Created.—Dr. E. Murphy Howard, Harlan, president of the Kentucky State Department of Health and past president of the state medical association, has, with the approval of the council, provided for a distinguished service medal to be given each year to the physician who represents the ideals of Kentucky medicine. The *Kentucky Medical Journal* states that this award is distinctly separate from the distinguished service medal awarded by the state medical association but will be given each year during the annual meeting of the association. The committee on award consists of Drs. Karl D. Winter, Ben W. Smock, Lillian H. South, all of Louisville, and the president and secretary of the association as ex officio members.

MASSACHUSETTS

George Bolling Dies.—Mr. George E. Bolling, who served the city of Brockton as chemist and bacteriologist for nearly fifty years, died May 20, aged 69.

Lecture Named for George Holmes.—On May 18 the New England Roentgen Ray Society created a lecture in honor of Dr. George W. Holmes, who is clinical professor of roentgenology emeritus, Harvard Medical School, Boston. The first lecture was delivered by Dr. Holmes.

Medicolegal Conference and Seminar.—The department of legal medicine of the medical schools of Harvard, Tufts College and Boston University in cooperation with the Massachusetts Medico-Legal Society will present a six day program

of lectures, conferences and demonstrations having to do with the investigation of deaths in the interests of public safety, at Harvard, October 1-6. Attendance during five of the six days of the course will be limited to fifteen persons who have registered in advance. On October 3 the program will be open to any physician, lawyer, police official or senior medical student who may care to attend. Further information may be obtained from the secretary of the Massachusetts Medico-Legal Society, 25 Shattuck Street, Boston.

Laboratories Dedicated.—The Shrewsbury Laboratories of the Worcester Foundation for Experimental Biology, Worcester, were dedicated on June 9. The foundation was incorporated in February 1944 (THE JOURNAL, May 13, 1944, p. 160) and is set up to make investigations at the discretion of its directors in the field of biologic sciences and publish the results of these investigations in scientific and medical journals so that they may become freely available to the public. Projects studied include hormone physiology, fatigue and the activity of the cortex of the adrenal gland as measured by urinary hormone excretion products, problems of human aging and cancer. The scientific work of the foundation is under the direction of Hudson Hoagland, Ph.D., and the laboratories are under Gregory G. Pincus, Sc.D.

MICHIGAN

Personal.—Dr. Willis R. Geerlings has been elected mayor of Fremont for a fourth term. —— Dr. Lowell S. Selling, Detroit, has resigned as director of the psychopathic clinic of the recorder's court, a position he held for ten years.—— Dr. Wilber J. M. Menke, formerly of Paris, Ill., has been chosen deputy commissioner in the state health department for the upper peninsula.

Study of Dental Caries.—Dentists of the U. S. Public Health Service are now examining 5,000 school children in Muskegon in a dental caries demonstration in which Muskegon was chosen as the control city. Grand Rapids was also selected for the demonstration, fluorine having been added to the city's drinking water. The dental records of some 28,000 school children in Grand Rapids before the fluorine was added to the city water supply have been completed. Periodic examinations will be made of school children in both cities to note any change made in the dental caries rate.

Alumni Association Honors Old Graduates.—Life memberships in the Wayne University College of Medicine Alumni Association were presented to twenty medical men at the annual dinner of the association held May 11 at the Statler Hotel, Detroit. All were graduated from the school fifty or more years ago (THE JOURNAL, May 12, p. 144). The oldest graduate honored was Dr. John A. Wessinger, for the past thirty years health officer for the city of Ann Arbor. Dr. Wessinger, who is 85 years old and still in active practice, received his diploma in 1882. Life memberships were also presented to Dr. Walter J. Cree, for many years historian of the Wayne County Medical Society, who graduated in 1883; Dr. Alfred N. Shotwell, Mount Clemens, 1884; Dr. Mortimer E. Roberts, Grand Rapids, 1889; Dr. William J. O'Reilly, Saginaw, 1890; Dr. Christian Storz, Toledo, Ohio, and Dr. Adolphus J. W. Nixon, Highland Park, both of the class of 1891; Dr. Nenian T. Shaw, Pontiac, 1892; Dr. Duncan J. McColl, Port Huron, and Dr. William H. Hoppenrath, Elwood, Ind., both graduated in 1893. Honored members of the class of 1894 included Drs. George Alexander, Pontiac; Henri Belanger, River Rouge; Alexander Thomson, Detroit, and Orlando A. Tooker, Lansing. The class of 1895 was represented by Drs. Channing W. Barrett, Chicago; Adelbert Edwards, Detroit; Thomas E. DeGurse, Marine City; Colin D. Munro and George E. Winter, both of Jackson, and Burt R. Shurly, member of the Detroit Board of Education. Dr. Clarence A. Mills, professor of experimental medicine at the University of Cincinnati College of Medicine, Cincinnati, spoke at the dinner meeting on "Climatic Imprint on Man."

MINNESOTA

Ninety Years of Age.—Dr. Thomas F. Quinby, Minneapolis, the oldest member in point of years and the oldest living ex-president of the Hennepin County Medical Society, observed his ninetieth birthday May 10. Dr. Quinby was elected to membership in the county society March 7, 1904, served as president in 1911 and became an affiliate member in 1931.

Illegal Practitioner.—On June 5 Marjorie J. Blatzheim, aged 29, Minneapolis, pleaded guilty to a charge of practicing healing without a basic science certificate. Following a sentence to a term of one year in the Minneapolis workhouse, the sentence was suspended and the defendant was placed on probation for one year. The defendant had been arrested when it was learned that she had offered to perform a criminal abortion for a fee of $200. At the time of her arrest the woman stated that she had just purchased the speculum found in her purse at a hospital supply house in Minneapolis and that she had also attempted to purchase catheters to be used in performing abortions. She stated that she had obtained the knowledge of performing criminal abortions from a Minneapolis man who has two previous convictions for felonies and who has been in the Minneapolis workhouse on two occasions in the past year for violating the medical laws of Minnesota.

NEW HAMPSHIRE

New Dean of Dartmouth Medical School.—Dr. Rolf C. Syvertsen, assistant dean of the Dartmouth Medical School, Hanover, since June 1944 and a member of the faculty since 1923, has been appointed dean of the medical school, effective July 1. He succeeds Dr. John P. Bowler, who has resigned because of pressure of his surgical work but who will continue as professor of surgery at the medical school. Dr. Syvertsen has been professor of anatomy at Dartmouth since 1938 and for many years has been secretary of the school. Dr. Bowler has served as dean since 1927. Dr. Bowler and Dr. Syvertsen graduated at Dartmouth Medical School in 1917 and 1923 respectively. Both also graduated at Harvard Medical School, Boston, and Rush Medical College, Chicago, in 1919 and 1936 respectively.

NEW YORK

New Secretary of State Medical Board.—Dr. Jacob L. Lochner Jr., Albany, has been serving as secretary of the New York State Board of Medical Examiners since the resignation of Dr. Robert R. Hannon, Albany, who became executive officer of the state medical society.

Typhoid Traced to Carrier.—One carrier and one suspected carrier were found in a recent investigation of an outbreak of typhoid in Rochester. All 5 patients had eaten at the same restaurant in Rochester, 4 on one day and 1 two days later, but a review of the foods consumed failed to reveal any single item common to all. Practically all personnel had been employed at the restaurant for a number of years, during which time no typhoid had been traced to this source. Examination of blood and stool specimens, however, from each of these persons led to the discovery of a definite typhoid carrier and, in addition, of a suspected carrier. The definite carrier was employed in the restaurant bakery, but only 4 of the patients gave a history of having eaten bread and, according to *Health News*, it has not yet been determined exactly how she gave rise to the 5 cases, since no common food was implicated. As control measures the carrier and the suspected carrier were both relieved of their occupations and will be kept under surveillance.

New York City

License Reinstated.—The license to practice medicine in New York of Dr. Samuel G. Sisskind, Brooklyn, has been reinstated.

Personal.—Governor Dewey on May 28 reappointed Dr. George Baehr as a member of the state public health council to serve for a six year term dating from Jan. 1, 1945.—— Dr. Aaron A. Karan has been appointed executive director of the Bronx Hospital. Dr. Karan has been holding a similar position at the Beth Moses Hospital, Brooklyn.

Sulfonamide Drugs Banned Without Prescription.—The city department of health on June 12 amended section 118 of the city sanitary code to prohibit the sale of sulfonamide drugs or sulfonamide-containing products for internal or external use without a prescription, according to a release from the city department of health. The ban, which becomes effective October 1, is said to have followed a recommendation by the public health relations committee of the New York Academy of Medicine and other health groups, which pointed out that sulfonamide drugs in any form could be used safely only under expert supervision and at a physician's direction.

OHIO

Dr. Lower Honored.—The distinguished service award of the Cleveland Academy of Medicine for 1945 was presented to Dr. William E. Lower, one of the founders of the Cleveland Clinic, during the academy's annual meeting, May 18. The citation accompanying the honor cited Dr. Lower as "a distinguished surgeon and practitioner who has been a con-

stant contributor to the life of Cleveland's medical profession." The citation also said that he had been a member of the academy since 1895 and had held many offices, once president, in the organization. Dr. Loyal Davis, Chicago, addressed the meeting.

Personal.—Dr. Anna M. Young on May 19 was elected to the board of directors of the Cleveland Academy of Medicine, the first woman ever to hold the position.——Dr. Richard A. Bolt has resigned as director of the Cleveland Child Health Association to assist in the organization of the new school of public health at the University of California, Berkeley, the Cleveland *Press* reported May 21.——Dr. John N. McCann, Youngstown, has been appointed to a seven year term on the state medical board, succeeding Dr. John H. Skavlem, Cincinnati, who was appointed last November to fill the unexpired term of the late Dr. Claude V. Davis, Pennsville.——Dr. James A. Doull, professor of hygiene and public health, Western Reserve University School of Medicine, Cleveland, recently went to England on a special mission.

SOUTH CAROLINA

Fifty Thousand Dollars to Care for Indigent Cancer Patients.—The senate has approved a $50,000 appropriation for hospital care for indigent cancer patients in South Carolina. According to the state medical journal the money is expected to be made available to the state board of health July 1 and represents an increase of $34,000 over last year's appropriation of $16,000. Discussing the project, the state medical journal stated that Dr. George S. T. Peeples, Columbia, director of the division of cancer control, had announced plans to resume the program, which had been repeatedly interrupted and curtailed on account of a lack of funds. The new appropriation makes available, for the first time since the program started in 1939, sufficient money for hospital care of as much as one third of the state's indigent cancer patients. The disease, which recorded 1,205 deaths in 1944, is the second leading cause of death in the state.

TEXAS

Cancer Committees.—The M. D. Anderson Hospital for Cancer Research, Houston, University of Texas, plans to launch an educational program on cancer through the creation of statewide cancer committees, it is reported.

VERMONT

University News.—Dr. George W. Thorn, Boston, addressed the Osler Clinical Society, May 15, on "Use of Concentrated Human Albumin Solution in the Treatment of Nephrosis and Cirrhosis." This was the last of a series of lectures sponsored by the undergraduate organization at the University of Vermont College of Medicine, Burlington, during the current school year.

VIRGINIA

Changes in Health Officers.—Dr. John McIver Jackson has been appointed health officer of the Norfolk-Princess Anne Health District, succeeding Dr. William B. Baily.——Dr. Glenn H. Baird has resigned as health officer of the Smyth-Washington-Bristol Health District, effective May 10, to accept a commission with the U. S. Naval Reserve.

Student Fund Memorial to Physician.—Miss Dorothy M. Strickland, Roanoke, and Daytona Beach, Fla., has established a loan fund for worthy Southern medical students as a memorial to her father, Dr. James Thomas Strickland, according to the *North Carolina Medical Journal*. For many years Dr. Strickland practiced medicine in Roanoke.

Pathologists Organized.—The Virginia Society for Pathology and Laboratory Medicine was recently organized with Dr. William E. Bray, Charlottesville, as president. Other officers include Drs. Morris B. Beecroft, Newport News, vice president and Thomas M. Peery, Alexandria, secretary-treasurer. The society will be affiliated with the Medical Society of Virginia.

Personal.—Dr. Raymond D. Kimbrough, Norfolk, has been appointed associate professor of preventive medicine and public health and associate professor of dermatology and syphilology at the Medical College of Virginia, Richmond, effective May 1. He will continue his private practice.——Dr. Hudson Mason Wingfield has resigned as physician and surgeon of the Richmond Fire Department, effective April 30.

New Officers of Cancer Foundation.—Dr. Isaac A. Bigger, Richmond, was elected president of the Virginia Cancer Foundation at a recent meeting. Dr. George Cooper Jr., Charlottesville, was elected director. Mrs. Augusta F. Jarman, Charlottesville, was reelected secretary. The Richmond *Times-Dispatch* states that the foundation has been raising funds for the past five years to care for indigent cancer patients. At a recent meeting it was voted to extend its activities to advanced cancer patients with the idea in view that beds can be found in hospitals which do not now provide space for the care of incurable cancer cases.

Special Society Elections.—Dr. Meade C. Edmunds, Petersburg, was chosen president of the Virginia Society of Ophthalmology and Otolaryngology at its twenty-sixth annual meeting in Richmond recently. Other officers include Drs. Thomas E. Hughes, Richmond, vice president and Francis H. McGovern, Danville, secretary-treasurer. Among the speakers at the meeting were Drs. Oliver E. Van Alyea, Chicago, "Management of Chronic Sinus Disease: A Critical Analysis of Modern Therapeutic Measures"; Joseph Krimsky, Charlottesville, "Hearing Aids: The Otologist's Problem," and Grady E. Clay, Atlanta, Ga., "Ophthalmoscopic Classification of Hypertensive Diseases."——New officers of the Roanoke Academy of Medicine, who will take office in October, include Drs. Thomas J. Hughes, president; Charles M. Irvin and Blanton P. Seward, vice presidents, and George S. Bourne, secretary-treasurer.

WASHINGTON

State Medical Bureau.—Mr. Ralph W. Neill, executive secretary of the Washington State Medical Association, will combine his present activities with those of state bureau manager of the State Medical Bureau, according to *Northwest Medicine*. Offices for the bureau have been established at 218 Cobb Building, Seattle, and its purpose will be to coordinate the activities of the respective county bureaus as well as to study the provision of statewide medical and hospital service contracts. Other activities will be the investigation of assuming administration of the old age assistance medical aid program, in compliance with a suggestion by the state department of social security, and expanding medical and hospital services to cover workers' families.

WISCONSIN

Dr. Thompson Resigns as Health Officer of Racine.—Dr. Ira F. Thompson has announced his resignation as commissioner of health of Racine, effective sometime in October. Dr. Thompson has been serving in the position since 1932, when he succeeded Dr. William W. Bauer, who resigned to become director of the Bureau of Health Education of the American Medical Association, Chicago.

The Helmholz Lecture.—Dr. Thomas Duckett Jones, assistant professor of medicine, Harvard Medical School, Boston, delivered the annual A. C. Helmholz Lecture at the University of Wisconsin Medical School, Madison, June 1. His subject was "Rheumatic Fever." The Helmholz lectureship was established in the medical school in 1941 by the children of Mr. and Mrs. August C. Helmholz.

Memorial to Dr. Grill.—To perpetuate the memory of Dr. John C. Grill, students, friends and associates are establishing a fund to be known as "John Grill, M.D., Memorial Fund," the interest of which is to be used to buy books for the medical library of the Marquette University School of Medicine, Milwaukee, according to the *Milwaukee Medical Times*. Dr. Grill had been associate professor of bacteriology and pathology at Marquette until December 1944, when he was made head of the department. He died March 17.

PHILIPPINE ISLANDS

Status of Medical Facilities.—A communication June 12 received from the Philippines reports the destruction by recent action of the medical school and library, the cancer hospital and the outpatient buildings at the University of the Philippines. All of the clinical records of the Philippine General Hospital, Manila, were destroyed and only a few broken test tubes and specimen jars were left in the laboratory. Members of the staff who have survived the Japanese occupation are devoting their full time to the treatment of any and all who are sick and cannot be treated at home. There is a shortage of everything, and many diagnoses are made on physical findings alone. Serologic tests are made by one of the Army laboratories. Limited blood counts are done in the hospital but bacteriologic studies are not possible at present, it was

stated. There is a great need for books and periodicals for the medical school and hospital and the library. The communication credited the great skill of the Filipino physicians in the present emergency.

GENERAL

Sixteen Air Lines Operate Without Fatalities.—Sixteen American air lines completed their 1944 operations without a single fatal accident, the National Safety Council reported June 26 in announcing its 1944 Aviation Safety Awards.

Meetings Canceled.—The 1945 meeting of the Mississippi Valley Medical Society, scheduled to be held at St. Louis in September, has been canceled because of war restrictions. Plans are being made to hold the 1946 meeting in the Jefferson Hotel, St. Louis, September 25-27.——The National Safety Congress of the National Safety Council scheduled for October will not be held this year.

Booklet Urges National Program on Nutrition.—The National Planning Association has issued a booklet entitled "A Food and Nutrition Program for the Nation" which carries a proposal that the President appoint a special committee of public officials and experts to make recommendations on government organization for nutrition. The recommendation was also made that this same group serve as the U. S. representative in the International Food and Agriculture Organization.

Trudeau Medal Goes to Florence Sabin.—At a meeting of the executive committee in New York June 6 the National Tuberculosis Association has awarded its Trudeau Medal to Dr. Florence R. Sabin, Denver, for her "extensive studies of the physiologic activities of the chemical fractions of the tubercle bacillus." Dr. John Alexander, Ann Arbor, Mich., was chosen president-elect of the American Trudeau Society, medical section of the National Tuberculosis Association, and Dr. Ezra R. Bridge, Rochester, N. Y., was inducted into the presidency.

New Committee Urges Cabinet Post for Health and Welfare Services.—A new cabinet post for education, health and welfare services will be advocated by the Committee on Reorganization of Community Services, according to the chairman, Mrs. Eugene Meyer, as reported in the New York *Times*, June 12. The committee of twenty-five working under the auspices of the Woman's Foundation plans to submit a detailed report soon, it was stated. Mrs. Meyer is reported to have said that a secretary of health, education and welfare, such as her committee proposes, would help local and state agencies by "dynamic leadership and financial assistance and by setting standards 'below which no American should be permitted to live.'"

Esmond Snell Receives Lilly Award.—Esmond E. Snell, Ph.D., of the research staff of the Clayton Biochemical Institute of the University of Texas, Austin, was on May 26 presented with the Eli Lilly and Company award in bacteriology and immunology for 1945 in recognition of his work on the nutritional requirements of micro-organisms. Selection of the recipient of the award is made by committees of the Society of American Bacteriologists, American Association of Immunologists and the American Society for Experimental Pathology. Eli Lilly and Company has made an additional grant making possible three more awards, presumably for 1946, 1947 and 1948. The award consists of a check for $1,000 and an engraved medal.

Narcotic Violations.—The U. S. Bureau of Narcotics announces the following actions:

Dr. Charles J. Raney, Yazoo City, Miss., pleaded nolo contendere to a violation of the Harrison Narcotic Law in the U. S. District Court, Jackson, Miss., May 7, and was placed on probation for three years.

Dr. James Samuel Harmon, Prichard, Ala., pleaded nolo contendere in the U. S. District Court at Mobile, Ala., to a violation of sending poison through the mail and on May 5 was sentenced to one year and one day and fined $500. Execution of the penitentiary sentence was suspended.

Dr. William Allen Young, Louisville, Miss., pleaded guilty in the U. S. District Court at Aberdeen, Miss., April 2 to violation of the narcotic law and was sentenced to a prison term of one year and one day and placed on probation for a period of five years.

Dr. Pasquale E. Massa, Boston, pleaded guilty in the U. S. District Court, Boston, May 1, to violation of the Harrison Narcotic Law and was fined $500 and placed on probation for five years.

Dr. Joseph A. Hirsch, Edwardsville, Ill., pleaded guilty in the U. S. District Court at Springfield, Ill., to violation of the federal narcotic law on March 19 and was fined $2,000.

Dr. Charles W. Robertson, Chandler, Okla., was fined $1,000 on April 11 following his plea of guilty in the U. S. District Court at Oklahoma City to violation of the Harrison Narcotic Law.

Dr. William Lee Cosby, Painter, Va., pleaded guilty in the U. S. District Court at Norfolk May 18 to violation of the Harrison Narcotic Law. He was given a suspended sentence for one year and placed on probation for a similar period.

Metropolitan's Tuberculosis Sanatorium to be Closed.—On September 1 the Metropolitan Life Insurance Company will close its tuberculosis sanatorium, which has been maintained at Mount McGregor, N. Y., since 1913 for the treatment of its tuberculous employees. Although a total of 3,507 employees have received treatment for tuberculosis since 1913, it is now felt that the number of patients and the period of treatment have been reduced to a point which no longer justifies the maintenance of an institution of this size. Patients now at the sanatorium will be given treatment at the company's expense in comparable sanatoriums located nearer to their homes. The Metropolitan sanatorium is located in the foothills of the Adirondack Mountains near Saratoga, N. Y. It occupies about 1,600 acres and consists of thirty buildings, including besides the main fireproof structure ward buildings, an infirmary and residences for the physician in charge, the staff and the nurses' home, providing facilities for the treatment of about 300 patients. One of the buildings, the John R. Hegeman Memorial Laboratory, established by the will of a former president of the Metropolitan, has been the seat of much of the modern research in the disease. The first director of the sanatorium was the late Dr. Horace J. Howk. He was succeeded by Dr. William H. Ordway, the present director.

FOREIGN

Faculty of Ophthalmologists Organized.—With the creation of a Faculty of Ophthalmologists by the Council of British Ophthalmologists, the council has dissolved. Officers of the council of the faculty were elected by ballot at its first meeting, April 12, and consisted of Brigadier Sir Stewart Duke-Elder, R. A. M. C., president; Dr. Frank A. Juler, vice president; Dr. Frank W. Law, honorary secretary, and Dr. Frederick A. Williamson-Noble, honorary treasurer. The address of the faculty is 45 Lincoln's Inn Fields, London, W. C. 2.

Endowment for Department of Anatomy.—Sir William Henry Collins, chairman of the Cerebos Salt Company, has made a gift of £100,000 to the Royal College of Surgeons for the endowment of the department of anatomy and for the establishment of a chair of human and comparative anatomy, according to *Science*. Last year Sir William gave £100,000 to endow a chair of pathology. The museum and research departments have been damaged during the war. Their maintenance, however, is now assured by the gift, and the college can proceed with its rebuilding plans.

Laboratory to Conserve Pathogenic Microbes.—A laboratory has been established in Lausanne, Switzerland, under the sponsorship of the Swiss Academy for Medical Sciences, which specializes in the preparation and conservation of pathogenic microbes common to man, animals and plants and which will operate in connection with the Institute of Hygiene and Bacteriology. Dr. Paul Hauduroy, professor of medical sciences at Lausanne and director of the Institute of Hygiene and Bacteriology, has been appointed director. According to an announcement from the Official Information Bureau of Switzerland, New York, samples of various microbes will be sent to scientists in all parts of the world who need such specimens in their research work. A detailed catalogue of the samples available will be prepared.

Japs Maintain Quinine Production in the Netherlands Indies.—Dr. Pieter Honig, member of the board for the Netherlands Indies, who recently returned from a survey of the liberated section of the Indies, stated that his observations and last minute underground reports show that the Japanese have been maintaining all quinine producing equipment that were not destroyed by the Dutch early in 1942. Dr. Honig is quoted in the Netherlands *News* as saying that reports coming from the men on the occupied islands indicates that quinine in the form in which the Dutch processed it is steadily being produced by the enemy to fight malaria and further that no Dutch or Indonesians are getting the quinine even though some of the equipment was left intact for that purpose. Much new equipment for processing cinchona bark into quinine, including twenty-five huge drying ovens capable of producing 2,200 pounds of dried bark per oven daily, is being purchased in the United States as rapidly as possible. This new machinery, plus vast numbers of trees maturing whenever the Indies are freed, will result in greatly increased quinine production for fighting global malaria, Dr. Honig said. He pointed out that, because cinchona trees from which quinine is extracted mature in cycles, no acute shortage of either bark or drug can occur for about fifteen years. By that time, authorities believe, the gap caused by Japanese omission to plant new trees will be closed by other means.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 26, 1945.

The British Medical Journal During the War

In its annual report the council of the British Medical Association states that the *Journal* has continued to appear regularly notwithstanding the war difficulties of production and distribution, with severe rationing of paper and shortage of staff. Since last year's report the obligatory circulation has grown in consequence of a large increase in membership, and the weekly printing order now approaches 53,000. With that figure a journal with an overall size of 60 pages and sometimes 64, compared with an average of 144 in 1938, can be produced on the present paper ration. Every means of economizing space has been adopted. From the early part of 1942 circulation outside the membership has been drastically curtailed and new subscriptions will be declined as long as the paper shortage remains. The number of original articles and medical memoranda submitted are far in excess of the space available under wartime conditions. Last year 946 signed articles were received, compared with 801, 797, 737 and 667 in the preceding years of the war. The total is now as large as before the war. Of the large number of letters from members at home and abroad only a selection can be published. The new section "Any Questions?" begun in 1943 has established its popularity and is continued in response to a wide demand. A first selection of the questions and answers has been prepared for publication in book form but awaits an allowance of paper for the purpose. A projected *Journal of Social Medicine*, under the editorship of Prof. F. A. E. Crew, to be issued by the association, is held up for the same reason.

Schemes for Emigration to the Dominions

The Japanese attempt to dominate the countries on the Pacific has wakened Australia and New Zealand to the danger of a small white population in control of vast territory in proximity to hundreds of millions of Asiatics. Hence immigration from Europe, preferably from Britain, has become important. Mr. F. M. Forde, deputy prime minister of Australia, who went to the San Francisco conference by way of London, stated that Australia had plans for the absorption of a steady flow of immigrants. The aim is to treble the present population of 7,300,000 in the shortest possible time. The extent to which the government succeeds would help substantially in ensuring the future security of the Pacific. Tens of thousands of emigrants from the British fighting forces would be welcomed, and it was hoped that the thousands of the young men now serving with the British fleet in the Pacific would make their homes in Australia after the war. They had decided on a child emigration scheme of 17,000 a year for three years after the war. Children from Britain would be preferred, but it was felt that the scheme should be extended to European children.

Daily inquiries at the London offices of the dominions in the last few months show an even more widespread desire to emigrate than in the closing stages of the last war and after it. The stream of inquirers includes civilians in many callings and members of the forces—skilled and unskilled, men and women—professional men in search of wider scope and careers for their children, parents wishing to rejoin sons and daughters, and others anxious to find places where their assured incomes would offer most benefits. But the available shipping is an obstacle. Australia House is receiving 700 to 800 inquiries a week. The New Zealand Office receives about 500 applications a week. South Africa House receives some 600 inquiries a week. Canada House is unable at present to discuss any plans for emigration, as Canada is already dealing with a large transport problem. Many thousands of Canadian soldiers who have served in this country have married British women. Already a special department deals with applications for the passage of wives and children at the rate of 100 a day. It is expected that the final total will be between 25,000 and 30,000. The difficulty which confronts all schemes of emigration to the dominions is, as previously shown in THE JOURNAL, that we are deeply concerned as to the maintenance of our population in Britain in consequence of the fall of the birth rate. The Australian scheme for child emigration is based on the large number of war orphans. On the European continent children have lost parents not only in the fighting but under the atrocious Nazi rule, with its deportations. Their parents have simply disappeared.

A College of Speech Therapists

A new institution, a College of Speech Therapists, has been formed. At the inaugural session Sir Farquhar Buzzard, who presided, said that over many years he had become more and more aware of the value of speech therapists to the doctor. He believed that the comprehensive medical service, now proposed, cannot function completely owing to the shortage of doctors, and that difficulties must be met by making greater use of medical auxiliaries, including speech therapists.

A surgeon, Mr. Zachary Cope, who is president of the Board of Registration of Medical Auxiliaries, said that none of the universities have a professor or lecturer in speech therapy. He thought that local authorities should regard speech as at least as important as grammar. Nine out of ten doctors, if asked where they would send a patient with defective speech, would be unable to give an answer. As an examiner in surgery he had known many candidates who might have failed owing to a speech defect but for an effort at understanding by the examiner. He thought that there should be a speech therapist at all major hospitals, but outside London there were only twenty-five hospitals with a speech therapist attached to them. At present the new college had only 200 to 300 members, but twice or thrice that number were needed.

A Record in Blood Donation

The Ministry of Health has published what it calls "a new record for blood donations." In the course of a single day's session a mobile team operating from the ministry's blood transfusion center at Leeds collected blood from 820 donors, all of whom were service personnel at a military unit. This is the highest number of donors ever dealt with by one team during a working day. The team consisted of one medical officer assisted by twelve nurses, a blood grouping technician and a clerk. They worked from 8 a. m. to 4:30 p. m. The next day all the blood collected was flown to the British army in western Europe.

Physician's Bequest for Carrying Out the Treatment He Advocated

Dr. J. R. Whitwell, for twenty-seven years medical superintendent of St. Audry's Hospital, Melton, Suffolk, has left his fortune of $130,000 to form a fund for the after-treatment of the mental patients of his hospital and to help to set them up in occupations. He always contended that many discharged mental patients could again become useful citizens if financial help was provided for them. Thus his bequest provides for the carrying out of the treatment he advocated during his life.

A Register of Dietitians

The Board of Registration of Medical Auxiliaries has published the first register of dietitians, which contains the names of 140 members of the British Dietetic Association. Dietetics is defined as "the interpretation and application of the scientific principles of nutrition in health and disease." But registered

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dietitians agree, in cases of disease, not to undertake the dietetic treatment of any condition except under the direct control of a registered medical practitioner. The register is designed for the use of those requiring the services of an expert on all matters pertaining to diet.

Exhibition of War Injuries

An exhibition of war injuries is being held at the Royal Society of Medicine. Open only to the medical profession, it consists of pathologic specimens, colored photographs and drawings of typical war injuries. Before its destruction by German bombs the Army Medical War Collection was housed at the Royal College of Surgeons. The Medical Research Council then arranged with other medical organizations for a new collection, some of which is now being shown.

PARIS

(From Our Regular Correspondent)

May 12, 1945.

Mortality in France Since the War

The reports of the Institut national d'hygiène, published by its director, Professor Chevallier, brought out a peculiar mortality trend since the war, which consists in a considerable increase in the mortality in some areas but is compensated in part by a less pronounced and unexpected reduction in mortality figures in other regions. The zones with increased mortality are the densely populated regions; the zones with a decrease are predominantly rural regions with a developed agriculture.

Mortality rates in a homogeneous, chiefly agricultural region formed by nine departments in the west with a population of 4,183,000 for 1937, 1938 and 1939 amounted to 59,316, or 170 for 10,000 inhabitants; in the course of the three war years 1941, 1942 and 1943 the death rate here averaged only 152 for 10,000 inhabitants, a decrease of 10.6 per cent. In an urban region located on the Mediterranean with a population of 5,872,000 there were during the period from 1936 to 1938 an average of 53,176 deaths, a mortality rate of 137 per 10,000 of population, and for 1941 to 1943 a rate of 188 per 10,000, an increase of 37.2 per cent.

This tendency to increase in deaths in urban populations and to decrease in rural regions was found over the entire territory. The causes of this difference are difficult to determine, but it seems that nutrition plays an important part. Lack of conveyances and difficulties in distribution were doubtless responsible for the cruel want in the cities.

Considering the mortality by age groups and comparing it in the two typical regions selected by Chevallier, it was found that in the rural regions the decrease is general except in infants under 1 year, in whom the death rate has increased on the average by 22 per cent. In the urban regions the deaths of infants under 1 year have increased by 14 per cent, but the general mortality showed a growing curve with an almost normal profile, attaining 185 in aged persons. The decrease in mortality in the agricultural region involves particularly the active part of the population, between 15 and 65 years. It seems that for this population the war conditions have brought an improvement in living conditions; their diet permits them to endure their hard work better. In the Mediterranean or urban region the picture is bleak because of the increase in mortality in the ages usually affected by tuberculosis. It is, in fact, 28 per cent between the ages of 30 and 35.

The dietetic conditions before the war were not satisfactory in the rural regions. Different observers have noted that as a result of the occupation (refusal to deliver their produce, difficulties of communications), the French farmers have themselves consumed considerable quantities of the rich foods which they formerly sold, such as meat, butter and eggs.

Mortality of Infants During the Winter of 1944-1945

In 1938 the mortality of infants under 12 months diminished slowly but constantly, but in 1940 the mortality increased by 40 per cent; 1941 brought a mild improvement in the rate, with a decrease of 12 per cent, and in 1942 by 7.4 per cent as compared with 1938. The great increase in 1940 was due in part to the exodus, which was hard on the very young. However, in 1943 the ratio between 1938 had risen again by 15 per cent, without there being important epidemics during this year. The maximum number of deaths in 1943 occurred in the months of July and August, when before the war the mortality curve would show a slight fall. At the same time there was a renewed increase in the disorders of the digestive tract. The poor quality of the milk was probably the chief cause of the increase in infant mortality. The infants of 1944, except for the lucky ones who received American shipments of condensed milk, drank the worst milk. In 1941 the Germans imposed a decree requiring a skimming of 30 per thousand. Objections of pediatricians and hygienists were in vain; and this measure, designed to increase the requisitions of butter by the occupants, led to regrettable manipulation such as mixing skimmed and whole milk, as well as other adulterations. Furthermore, as Lesné has pointed out in a report to the Académie de médecine, war conditions led to a weakening of milk control. It was poorly

TABLE 1.—*Mortality in Paris During the Past Two Winters*

Months	Deaths in Paris	Months	Deaths in Paris	Excess
December 1943	151	December 1944	354	203
January 1944	169	January 1945	576	407
February 1944	194	February 1945	552	358

TABLE 2.—*Average Weight of the Newborn in France*

Years	1938	1939	1940	1941	1942	1943
Weight in grams	3,277	3,292	3,255	3,166	3,135	3,232

pasteurized, and the milk cans were inadequately cleaned because of lack of fuel. The milk soured easily and contained several million germs per cubic centimeter, with thousands of bacilli of the coliform type.

The situation was aggravated in 1944 and the rigors of the winter have been fatal for nurslings. The comparative figures for the winter of 1944-1945 and the preceding one are given in table 1.

The weight is not the essential measure of the vitality of an infant. If it has not suffered an intrauterine infection, the weight of a child will remain normal or almost normal whatever the state of the health of the mother. Even a cachectic tuberculous mother will have a fully developed child. One can see this from the average weights of the infants born during the war years (table 2) of mothers debilitated and depressed by malnutrition, anguish, hard work and prolonged standing.

The severe and prolonged winter and lack of fuel was largely responsible for the deaths of the newborn, whom the war conditions made more susceptible. They succumbed chiefly to upper respiratory or pulmonary disorders.

There is fear that in the coming summer there will be a considerable increase in the deaths of the very young from gastrointestinal disturbances because of the poor quality of the milk. To save these children France needs large quantities of canned milk. It is hoped that the energetic measures considered by the health services will at least attenuate this grave danger. There arrive now daily in Paris 60,000 liters of bottled milk which is pure, wholesome and up to the old standards. These shipments will increase considerably in the coming months.

ICELAND

(From Our Regular Correspondent)

May 25, 1945.

Nutrition of the Population

A committee was appointed by the government in 1939 to obtain information on the nutrition of the Icelandic population, which, although unquestionably greatly improving, was suspected of being in some respects deficient. No fruits are grown in the country, and production of cabbage is relatively small. The staple diet has for a long time been fish, mutton, milk, potatoes and bread.

INVESTIGATION OF FAMILY DIETS

Although a shortage of vitamin C must be expected under these conditions, scurvy has been a rare disease in this century. Formerly one of the worst scourges of the country, it has dwindled to insignificance since consumption of potatoes came into common usage about one hundred and fifty years ago. The lack of sunshine during the dark winter months must lead to a deficiency of vitamin D, and rickets is a common ailment, although rarely encountered in its worst form. A systematic survey of children under 2 years of age showed an incidence of 74 per cent with clinical or roentgenologic signs of rickets.

The first task of the National Council of Nutrition was to have an investigation made of what people were eating in Iceland. For that purpose sixty-five families were selected to keep careful records of their diets for a whole year. Of these fifty-four made satisfactory records, but nine were omitted as unreliable. These fifty-four families from different parts of the country supplied the information from which Dr. J. Sigurjónsson compiled his data on the food consumption of the population, as published in his monograph Mataræði og heilsufar (Reykjavik, 1943).

MAIN CHARACTERISTICS OF NUTRITION

The average consumption of men was found to be 3,090 calories in towns and villages and 3,553 calories among the rural population. Seasonal variations were negligible. Protein consumption averaged 135 Gm. per day in towns and villages and 167 in the country, or from three to four times what Sherman considers should be the minimum. As 70 Gm. is considered sufficient for everybody, the people are consuming twice that amount. The source of this liberal protein consumption is chiefly to be sought in fish and milk, both of which are abundantly available all over the country. Fat consumption was 125 and 155 Gm. respectively in towns and the country, contributing about 40 per cent to the total calory consumption. Carbohydrates contributed a similar amount to the calory intake, or 330-350 Gm. per day. The intake of calcium varied from 0.68 to 2.95 Gm. per day, averaging 1.14 in towns and 2.08 in the country. The liberal calcium intake is probably at least partially deprived of its nutritional value through lack of vitamin D. The Ca/P ratio was 1/1.5-1.68 in towns and 1/1.3-1.4 in the country, or fairly well balanced. The intake of iron was sufficient, 18 to 28 mg. per day. The chief characteristic of the average food consumption is seen to be the high protein intake, which is higher than found elsewhere (Denmark 110, Cardiff 78.7, Sweden 99 Gm., all prewar figures).

VITAMINS

The intake of vitamin A varied from 1,386 international units in a town in spring to 6,151 in a rural community in autumn. All communities showed lowest intakes in spring and highest in autumn. Most communities ranged between 2,400 and 3,000 international units per day.

Vitamin D is a difficult factor to grasp in such a survey, as the skin irradiation cannot be estimated. The low content of this vitamin in the food (generally from 100 to 300 international units) indicates a deficient supply of this important food factor in a country where everybody lacks sunshine in winter and the greater part of the population does not take the required advantage of the long days in summer. This vitamin may therefore with certainty be considered as insufficiently supplied in most homes.

Vitamin B_1 was considered fairly sufficient, averaging 446 international units in rural areas and 569 in towns. Riboflavin and niacin were not estimated, nor the rest of the B complex.

The intake of vitamin C varied from 12.5 mg. per person daily in spring in towns to 50.2 mg. in rural areas in autumn, the usual intake being about 20 mg. per adult. One community was down to 7.2 mg. in spring.

The chief sources of vitamin C are milk and potatoes, neither of which is rich in ascorbic acid. The content of potatoes decreases on storage, so that potatoes are a poor source in spring, which is clearly reflected in the figures from all places.

In spite of the low intake in this vitamin, scurvy is a rare disease in Iceland, only a few cases being observed yearly. The question whether latent scurvy is frequent cannot be answered at present, but many doctors incline toward the opinion that in spite of the low intake there is no visible lack in this vitamin. It has long been known that some people need more of this vitamin than others, and the possibility cannot be rejected that a selection has taken place through ages of hardship, with extermination of those requiring the higher quantities. Yet the constant hunger for fruits among the population points to an unsatisfied demand, which may have a deeper cause than that of novelty and change. As clinical signs of scurvy do not appear until four to six months after deprivation of the vitamin, there might exist a latent scurvy in winter and spring, which is corrected by consumption of fresh vegetables in summer.

EFFECT ON HEALTH

Icelanders in general have bad teeth, probably owing to lack of vitamins C and D, both of which are necessary for normal odontoblastic function. The increased requirements of women in the childbearing period is reflected in the caries rate. Up to 16 years the women have better teeth than men, but after that their teeth deteriorate much more rapidly. In the age group 30-40 the men displayed a caries rate of 31 per cent, but 90 per cent of all teeth in the examined women were decayed in this age group.

Tuberculosis has for a long time been a devastating disease in Iceland, the mortality rate surpassing 200 per hundred thousand a decade ago. The great proportion of acute cases, caseous pneumonia, meningitis and miliary dissemination is supposed to be a result of faulty nutrition, chiefly with regard to vitamins C and D. The fact that hepatic cirrhosis (Laënnec's) is hardly ever seen in Iceland might be explained by the protein-rich nutrition, which gives a good protection against damage to the liver.

Marriages

WINDER LAIRD PORTER, Wilmington, Del., to Miss Gladys Virginia Streett of Harbeson, May 12.

JOHN R. TIMMONS, Columbia, S. C., to DR. FRANCES WOODS LOVEJOY in Scarsdale, N. Y., June 2.

RICHARD S. O'CONNELL, Poston, Ariz., to Miss Virginia Bayliss of Rohwer, Ark., recently.

CARLTON L. OULD, San Francisco, to Miss Ruth McKevitt of Ironwood, Mich, January 6.

WILLIAM HENRY FOEGE to Miss Leslie Warnick Phelps, both of New York, June 3.

THOMAS J. RITTER to Miss Mary Susan Kern, both of Allentown, Pa., April 23.

MAJOR BERNARD WINKLER to DR. MIRIAM F. HELLER, both of Brooklyn, May 10.

JOHN T. SULLIVAN JR. to DR. TULLIA D. TESAURO, both of Chicago, May 30.

Deaths

Beverley Randolph Tucker ✠ Richmond, Va.; Medical College of Virginia, Richmond, 1905; since 1938 emeritus professor of neuropsychiatry at his alma mater; specialist certified by the American Board of Psychiatry and Neurology, Inc.; past president of the Tri-State Medical Association and the Mental Hygiene Society of Virginia; president of the Richmond Academy of Medicine, 1942-1943; member of the American Neurological Association and the American Psychiatric Association; fellow of the American College of Physicians; member of the Society of Cincinnati, serving as president in the state of Virginia from 1933 to 1935; member of the state board of health and chairman of the first governor's Mental Advisory Board at the state penitentiary; during World War I member of the medical advisory board in Virginia, and contract surgeon in the U. S. Army in 1918; member of the American board of the American Hospital in Paris; member of the board of Nemours Foundation; served as vice chairman of the city library board; member of the board of the Industrial Home for Girls and consulting physician to State Colony for Feebleminded and Epileptic; neuropsychiatrist to the hospital division of the Medical College of Virginia; first Juvenile Court physician and one of the founders of the children's clinic; consulting neuropsychiatrist to the Johnston-Willis and St. Elizabeth's hospitals; editor, *Old Dominion Journal of Medicine and Surgery* from 1908 to 1914; author of "S. Weir Mitchell" 1914, "Nervous Children" 1916, "Verses of Virginia" 1923, "The Lost Lenore" (one act play) 1929, "The Gift of Genius, Adolescence" 1930, "Narna Darrell" 1936, "Various Verse" 1938, "Tales of the Tuckers" 1942; author of the section on cranial nerves in Tice's Practice of Medicine; contributed articles to medical publications and poems to newspapers and magazines; founder of the Tucker Hospital, where he died June 19, aged 71, of cerebral thrombosis.

John Edward Jennings, Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1899; member of the American Medical Association, serving in the House of Delegates in 1931; past president of the Medical Society of the County of Kings; member of the American Surgical Society; member of the New York Academy of Medicine; a fellow of the Brooklyn and New York Surgical societies, the New York Gastroenterological Society and the Brooklyn Thoracic Society; a fellow and founder member of the American College of Surgeons, serving as a member of the board of governors from 1926 to 1941 and regent since 1931 and first president of the Brooklyn chapter; specialist certified by the American Board of Surgery; at one time clinical professor of surgery at the Long Island College Hospital; during World War I entered the medical corps of the U. S. Army as a major and was promoted to lieutenant colonel in charge of an evacuation hospital in France; during World War II acted in an advisory capacity on the Selective Service staff; member of the New York City Board of Health; attending surgeon, St. Peter's Hospital; surgeon in chief, St. John's Hospital; consulting surgeon, Huntington (N. Y.) Hospital and the Mary Immaculate Hospital, Jamaica, N. Y., Bethany Deaconess, Beth-El and Cumberland hospitals, Norwegian Lutheran Deaconesses' Home and Hospital and the Brooklyn Hebrew Home and Hospital for Aged; consulting surgeon and formerly director of the surgical service, Brooklyn Cancer Institute; senior surgeon at the Brooklyn Hospital, where he died May 25, aged 69.

Frederick Bingham Miner ✠ Flint, Mich.; Detroit College of Medicine, 1906; specialist certified by the American Board of Pediatrics, Inc.; fellow of the American Academy of Pediatrics and the American College of Physicians; member of the American Public Health Association and at one time chairman of its committee on endemic goiter; member of the Detroit Pediatric Society and the Michigan Trudeau Society; past president of the Genesee County Medical Society, which he served for many years as treasurer and business manager, becoming in 1914 the first editor of its *Bulletin*; a captain in the medical corps of the U. S. Army during World War I; one of the organizers of the pediatric section of the Michigan State Medical Society; served as examiner for the Kiwanis Health Camp, examiner of Civil War veterans, executive board member and past president of the Genesee County Tuberculosis Association, secretary of the medical advisory board of the Clara Elizabeth Fund for Maternal Health and president of the Donald McFarlan Whaley Memorial Home for Children; formerly physician for the King's Daughters Home; on the Mayor's Health Committee and the boards of the International Institute and Family Service Agency; formerly director of pediatrics at Hurley Hospital; at the time of his death in charge of pediatrics at the Women's Hospital and St. Joseph Hospital; for three years a member of the Oak Grove Hospital; a trustee and at one time vice president of the Michigan State Horticultural Society; died April 26, aged 68, of myocardial infarction.

Hilliard Eve Miller ✠ New Orleans, Tulane University of Louisiana School of Medicine, New Orleans, 1916; joined the faculty of his alma mater on Nov. 12, 1917 as assistant instructor in obstetrics and gynecology and shortly thereafter was made instructor in clinical obstetrics; on July 13, 1925 appointed instructor in clinical gynecology and in July two years later made assistant professor of gynecology, professor of gynecology and head of the department from July 1, 1936 until he resigned July 16, 1944; served on the faculty of the Graduate School of Medicine of Tulane University; fellow of the American Gynecological Society, of which he had been secretary and member of the council; fellow of the American College of Surgeons and the Southern Surgical Association; member of the Southeastern Surgical Congress, Southern Medical Association and Louisiana State Gynecological and Obstetrical Society; member and in 1926 president of the New Orleans Gynecological and Obstetrical Society; a first lieutenant in the medical corps of the U. S. Army during World War I; served as chief of the department of gynecology at the Touro Infirmary, senior gynecologist in the Tulane Division of the Charity Hospital and consulting gynecologist at the Flint Goodridge Hospital of Dillard University; trustee of the Isaac Delgado Memorial Fund; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; wrote chapters for Curtis's Obstetrics and Gynecology and Davis's Obstetrics and Gynecology; died April 20, aged 51, of heart disease.

James Howell Corwin, Washington, Pa.; Jefferson Medical College of Philadelphia, 1903; member of the American Medical Association and member of its House of Delegates in 1934, 1942 and 1943; past president of the Washington County Medical Society; past vice president of the Jefferson Medical College Alumni Association; member of the committee on medical economics of the Medical Society of the State of Pennsylvania; city medical director of Washington; on the staff of the Washington Hospital; died in the Veterans Administration Facility, Aspinwall, May 20, aged 66, of arteriosclerosis and diabetes mellitus.

John Pracher ✠ Monroe, La.; Georgetown University School of Medicine, Washington, D. C., 1915; member of the American Society of Clinical Pathologists; served as assistant professor of anatomy (histology and embryology) at his alma mater and instructor in biology in the dental school; formerly on the staff of the Tuberculosis Hospital in Washington, D. C., and clinical pathologist at the Holy Family Hospital in La Porte, Ind.; since July 1927 clinical pathologist and bacteriologist at St. Francis' Sanitarium; died March 30, aged 62, of coronary occlusion.

Braden Miller Alleman ✠ Cincinnati; Eclectic Medical College, Cincinnati, 1929; served during World War I; secretary-treasurer of the staff and member of the consulting and active staff of the Bethesda Hospital; died May 10, aged 47, of coronary disease.

George Shafter Allen, Baltimore; Howard University College of Medicine, Washington, D. C., 1924; died March 27, aged 46, of cerebral hemorrhage.

Edwin Judge Barnett ✠ Spokane, Wash.; University of Illinois College of Medicine, Chicago, 1916; member of the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics, Inc.; served overseas during World War I; interned at the Cook County Hospital in Chicago; on the staffs of the Deaconess, Sacred Heart and St. Luke's hospitals; died March 29, aged 50, of coronary thrombosis.

Martin L. Barshinger ✠ York, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; formerly health officer of York; served as physician to the County Home and city jail; died April 9, aged 78, of carcinoma of the prostate.

Harry Ferris Beebe, Grayslake, Ill.; Chicago Homeopathic Medical College, 1894; formerly health officer of Antioch and president of the school board; died May 17, aged 78, of heart disease.

Harry Franklin Bennett, Litchfield, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1895; member of the American Medical Association; for many years secretary of the Montgomery County Medical Society; served during World War I; died in St. Francis Hospital May 18, aged 73, of cerebral hemorrhage.

Raymond Joseph Blum ✠ Rochester, N. Y.; University of Buffalo School of Medicine, 1910; on the staff of St. Mary's Hospital, where he died May 22, aged 57, of carcinoma of the lung.

Barbara Jean Boyd, San Francisco; University of Oregon Medical School, Portland, 1942; interned and served a residency at the Children's Hospital, where she died April 29, aged 28, of injuries received in an automobile accident.

William Griffiths Carter Brannon, Philadelphia; Howard University College of Medicine, Washington, D. C., 1918; member of the American Medical Association; on the courtesy staff and formerly chief of the outpatient department and associate in the department of surgery at the Frederick Douglass Memorial Hospital, where he died April 8, aged 51, of hemiplegia due to hypertensive cardiovascular disease.

Fidelio Fletcher Brown, Chicago; National Medical College, Chicago, 1896; Dunham Medical College, Chicago, 1900; also a dentist; life member of the Illinois Dental Association and member of the American Dental Association; died May 28, aged 75, of cardiac degeneration and Parkinson's disease.

Lee Van Leer Brown, De Land, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; member of the American Medical Association; past president of the Volusia County Medical Society; served overseas during World War I; served on the staff of the Deland Memorial Hospital; died March 20, aged 65, of arteriosclerosis.

Edward A. Bruns, Plymouth, Wis.; Homeopathic Medical College of Missouri, St. Louis, 1899; died March 12, aged 72, of coronary thrombosis and arteriosclerotic heart disease.

Walter Edward Bundy, Oak Hill, W. Va.; University College of Medicine, Richmond, 1908; member of the American Medical Association; president of the Fayette County Medical Society; died June 4, aged 61, of heart disease.

MAJOR EDGAR CRAWFORD FONDE, M. C., A. U. S., 1905-1945

LIEUT. COMDR. GEORGE W. FOX, (MC), U.S.N.R., 1906-1945

William Craig Byers ✠ Webster, Pa.; Medical Department of the Western University of Pennsylvania, Pittsburgh, 1906; served during World War I; associate staff member of the Charleroi-Monessen Hospital, Charleroi, where he died April 28, aged 74, of cerebral hemorrhage.

Jesse Hope Campbell, Commerce, Ga.; Emory University School of Medicine, Atlanta, 1916; member of the American Medical Association; fellow of the American College of Surgeons; specialist certified by the American Board of Otolaryngology; served during World War I; on the staff of the Commerce Hospital; died April 14, aged 54, of angina pectoris.

William Taylor Chamberlin ✠ Hempstead, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1898; served as mayor of Hempstead and as president of the village; physician to the Nassau County Home; on the staff of the Nassau Hospital, Mineola; died May 22, aged 71, of pneumonia.

Thomas Grier Cook, Nicholasville, Ky.; Medical College of Virginia, Richmond, 1903; member of the American Medical Association; formerly coroner of Jessamine County; on the courtesy staffs of St. Joseph's Hospital and Good Samaritan Hospital, Lexington, where he died May 12, aged 72, of arteriosclerotic and congestive heart disease and cerebral hemorrhage.

William Alva Davis, Baltimore; Baltimore Medical College, 1898; member of the Society of American Bacteriologists; died March 28, aged 70, of carcinoma of the stomach.

William Henry Earnest, Seymour, Iowa; Cincinnati College of Medicine and Surgery, 1870; Civil War veteran; died March 4, aged 96, of coronary thrombosis.

Ottice Norval Eisaman, Pittsburgh; Medical Department of the Western University of Pennsylvania, Pittsburgh, 1906; director of the division of biologic laboratory, city board of health; in 1918 appointed bacteriologist; died April 19, aged 71, of cerebral hemorrhage and myocarditis.

Charles Bennett Fisher, Washington, D. C.; Howard University College of Medicine, Washington, 1918; died June 3, aged 54, of carcinoma of the prostate.

Horace Lee Franks ✠ Baltimore; College of Physicians and Surgeons, Baltimore, 1892; died April 2, aged 77.

Paul W. Friedemann, Stillwater, Okla. (licensed in Oklahoma by years of practice); a commissioned officer, served six years in the Imperial Russian Army; member of the American Medical Association; on the staff of the Stillwater Municipal Hospital; member of the chamber of commerce; died March 15, aged 84, of coronary thrombosis.

John Archibald Garrettson ✠ Indianapolis; Medical College of Indiana, Indianapolis, 1904; a medical officer during World War I; for many years a member of the faculty of his

KILLED IN ACTION

Edgar Crawford Fonde ✠ Mobile, Ala.; University of Pennsylvania School of Medicine, Philadelphia, 1930; interned at the Pennsylvania Hospital in Philadelphia and served a residency at the Presbyterian Hospital in San Juan, P. R.; began active duty as a captain in the medical corps, Army of the United States, on Aug. 22, 1942; assigned to the Lawson General Hospital in Atlanta, Ga.; later went to the Mayo Clinic, Rochester, Minn., then for a six weeks course at the Army Medical School, Walter Reed Hospital, Washington, D. C.; assigned to the Kennedy General Hospital in Memphis, Tenn., for a short while; went overseas in February 1945, at which time was reassigned to the surgical division of the 106th Evacuation Hospital; from D day on through the invasion in command of a field surgical unit and worked behind the advancing lines through France and across the Rhine; promoted to major; killed in action north of Frankfort, Germany April 1, aged 39.

George William Fox ✠ Milwaukee; Rush Medical College, Chicago, 1931; interned at the Presbyterian Hospital in Chicago; member of the Milwaukee Academy of Medicine and the American Association of Railroad Surgeons; specialist certified by the American Board of Surgery; served as clinical instructor in surgery at the Marquette University School of Medicine and on the staffs of the Milwaukee Children's and Milwaukee hospitals; at one time chief surgeon for the International Harvester Company; held the position of assistant surgeon with two railroad firms; began active duty as a lieutenant in the medical corps of the U. S. Naval Reserve on Aug. 17, 1942; later promoted to lieutenant commander; died during attack on the *Franklin* in the Pacific area March 19, aged 38, of asphyxiation.

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alma mater; served on the staffs of the City, St. Vincent's and Methodist Hospitals; died April 20, aged 66, of cardiovascular renal disease.

William Priest Greening ✠ Pauls Valley, Okla.; Hospital College of Medicine, Louisville, Ky., 1901; served during World War I; on the staff of the Lindsey-Johnson-Shirley Hospital; died March 2, aged 69, of coronary thrombosis.

William Greig, Denver; Bellevue Hospital Medical College, New York, 1881; member of the American Medical Association; died in the Mount Airy Sanitarium March 22, aged 92, of lobar pneumonia.

Hovhanness Manook Hadidian ✠ Troy, N. Y.; American University Medical School, Beirut, Syria, 1905; served during World War I; on the courtesy staff of the Samaritan Hospital; died May 19, aged 67, of coronary thrombosis.

Russell Lowe Hodge ✠ North Kansas City, Mo.; Chicago College of Medicine and Surgery, 1912; served during World War I; on the staff of the Research Hospital, Kansas City, where he died March 27, aged 57, of carcinoma of the transverse colon.

Robert Elias Hogan, Dallas, Texas; Birmingham Medical College, 1901; member of the American Medical Association and the Medical Association of the State of Alabama; veteran of the Spanish-American War; died March 18, aged 69.

Francis Joseph Lennon, Buffalo; University and Bellevue Hospital Medical College, New York, 1908; served during World War I; on the staff of the Millard Fillmore Hospital, where he died April 24, aged 57, of ruptured esophageal varix.

Charles W. Littlefield, Seattle; Kansas City (Mo.) Homeopathic Medical College, 1896; died February 24, aged 85, of senility.

John Julius Loomis, Durango, Colo.; Loyola University School of Medicine, Chicago, 1922; member of the American Medical Association and the Nebraska State Medical Association; interned at St. Mary of Nazareth Hospital, Chicago; on the staff of St. Elizabeth's Hospital and for twelve years chairman of the department of obstetrics at the Bryan Memorial Hospital, both of Lincoln, Neb.; died March 21, aged 51, of coronary disease.

COLONEL JARRETT M. HUDDLESTON, M. C., U. S. A., 1893-1944

CAPT. PAUL LINTON KISTNER, M. C., A. U. S., 1916-1944

John Hortmon Mathews, Rebecca, Ga.; Birmingham Medical College, 1915; died March 27, aged 59, of coronary thrombosis.

John Adams Metzger, Long Beach, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; served in the U. S. Army from 1898 to 1905; placed on the reserve list as a major in 1908; formerly instructor and lecturer at the University of Southern California School of Medicine in Los Angeles; died May 9, aged 72, of cardiovascular heart disease.

Harry Maurice Montgomery, Burlington, N. C.; North Carolina Medical College, Davidson, 1903; member of the American Medical Association and honorary member of the Medical Society of the State of North Carolina; died March 31, aged 73, of angina pectoris.

James Lida Montgomery, Ellamore, W. Va.; Maryland Medical College, Baltimore, 1908; died in Baltimore, Md., April 7, aged 61, of coronary thrombosis and arteriosclerotic cardiovascular disease.

Harrison Galmoree Morris, Baton Rouge, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1900; member of the American Medical Association; past president of the Tangipahoa Parish Medical Society; on the associate staff of Our Lady of the Lake Sanitarium, where he died March 21, aged 79, of bronchopneumonia and coronary occlusion.

Harold Louis Walden ✠ Corbin, Ky.; University of Louisville Medical Department, 1921; died March 2, aged 48.

Raymond Delbert Watson ✠ Britton, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1929; physician for draft board number 7; on the staffs of the Polyclinic Hospital, University Hospital and the Wesley Hospital, Oklahoma City, where he died March 14, aged 40, of uremia.

Charles H. Wheeler, Okolona, Miss.; Meharry Medical College, Nashville, Tenn., 1907; died February 26, aged 67, of cerebral hemorrhage.

Giovanni Zoilo, Brooklyn; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1905; on the staff of the Cumberland Hospital; died February 2, aged 66, of heart disease.

KILLED IN ACTION

Jarrett Matthew Huddleston ✠ Colonel, M. C., U. S. Army, Washington, D. C.; George Washington University School of Medicine, Washington, 1916; Medical Field Service School, Carlisle Barracks, Pa., in 1921, the Army Medical School, Washington, D. C. in 1922 and the School of Aviation Medicine, Mitchel Field, N. Y., in 1923; commissioned a first lieutenant in the medical reserve corps of the U. S. Army in 1917; appointed to the regular army in October 1918; rose through the various ranks to that of lieutenant colonel in 1937; later promoted to colonel; during World War I served overseas as regimental surgeon with the First Engineers, First Division, was in six major engagements and received the Croix de Guerre for bravery; after the signing of the Armistice was assigned to the Army of Occupation; formerly professor of military science and tactics at George Washington University School of Medicine and the Georgetown University School of Medicine; served as secretary of the Army Medical School; in March 1942 assigned to duty at Headquarters, Second Army, then detailed to the 7th Corps, Allied Forces Headquarters, Algiers, and later joined the Fifth Army; awarded the Legion of Merit and an Oak Leaf Cluster to the Silver Star posthumously; a U. S. Army Hospital Ship named in his honor; before leaving for his last assignment overseas was stationed at Fort Beauregard, La.; in action since the landing of the troops in Salerno until he was killed Feb. 9, 1944, aged 51.

Paul Linton Kistner, St. Louis; St. Louis University School of Medicine, 1942; interned at St. John's Hospital; entered the medical corps, Army of the United States, on June 2, 1942; began active duty as a first lieutenant on July 3, 1943; promoted to captain; assistant regimental surgeon, 100th Infantry, 423d Regiment; killed Dec. 23, 1944, aged 28, while a prisoner of the Germans subsequent to the battle of the Bulge.

Correspondence

TREATMENT OF ERYTHROBLASTOSIS FETALIS

To the Editor:—The opinions expressed by Dr. Ruth Darrow on the treatment of erythroblastosis fetalis (THE JOURNAL, April 28, p. 1146) are so greatly at variance with present concepts of this disease and its pathogenesis that we of the Blood Grouping Laboratory in Boston wish to draw your attention to certain proved facts concerning Rh sensitization and its recognition, together with the observations of many investigators on the best therapeutic procedures for the treatment of erythroblastotic infants.

It is an accepted fact that the Rh positive erythrocyte has antigenic properties capable of stimulating Rh antibodies in an Rh negative person. The antigen may enter the body either directly by transfusion or via the placenta. Agglutinating antibodies (Rh agglutinins) resulting from such sensitization may be demonstrated by the proper laboratory methods as emphasized repeatedly by Levine and by Wiener. In some cases the severity of erythroblastosis in the infant appears to be directly proportional to the titer of such agglutinins in the maternal blood; in other instances, however, there is little or no agglutinin demonstrable by the usual technic (incubation of a 2 per cent suspension of Rh positive cells with the unknown serum for thirty to sixty minutes) and these cases in general have the most severe manifestations of the disease. The explanation of this paradox was furnished by Race, by Wiener and by Diamond and Abelson, who proved beyond doubt that inhibitor or blocking antibody is present in such instances and interferes with the usual laboratory technic for agglutination of Rh positive cells. The last mentioned writers also found that these inhibitor antibodies are most commonly present and tend to increase in concentration after repeated stimulation, thus being associated with progressively more severe erythroblastosis in successive infants. In the experience of the Blood Grouping Laboratory there is a close correlation between this evidence of repeated stimulation (i. e., blocking antibody) and the most serious forms of erythroblastosis such as icterus gravis, fetal hydrops and intrauterine death.

Dr. Darrow's statement that "sensitization does not parallel the number of antibodies either in the blood or in the body tissues" reveals an apparent unfamiliarity with this blocking phenomenon, which represents greater, rather than less, sensitization and certainly does not suggest immunity in the sense of desensitization. On the contrary, it has been demonstrated that with the proper tests for recognition of blocking antibodies in the blood (and these tests are very easily and simply applied) (Diamond and Abelson: *J. Lab. & Clin. Med.*, March 1945) the level of antibody does parallel the degree of sensitization and the severity of the disease in the infant. With respect to determination of antibody titers in body tissues, we know at present of no method of making either qualitative or quantitative estimations of such antibodies.

Attention is drawn next to that section of Dr. Darrow's letter dealing with the actual effects of anti-Rh agglutinins on the infant. The liver, lungs, spleen and other tissues are involved beyond question. However, the changes in these organs are, in the opinion of most pathologists, the result of the severe hemoclastic effect of the antibody-antigen reaction. Splenomegaly and hepatomegaly vary directly with the degree of red cell destruction and regeneration; pulmonary involvement, purpuric hemorrhages, edema and other findings are manifestations of very severe and frequently terminal hemolysis associated with blocking of end capillaries with cellular débris. In view of this the degree of anemia, rapidity of its onset and progress appear to provide the most reliable criterion for the institution of proper therapeutic measures rather than such indefinite signs as "toxicity." In the opinion of two well known investigators in this field (Mollison, Gimson) "the most important single clinical feature is the progressive fall in hemoglobin level below that normally expected." Furthermore, our experience with those cases manifesting cerebral damage (kernicterus) demonstrates that all such cases occur in those severely jaundiced infants who represent an extreme degree of sensitization of the mother, and not in those infants manifesting anemia without icterus.

The use of Rh positive blood transfusions in the treatment of erythroblastotic infants to prevent "flooding of the circulatory system with an excess of erythrocytes, since the Rh positive cells absorb the antibodies and are destroyed," seems to us an illogical procedure, especially since there is adequate proof that Rh negative cells not only replace the destroyed erythrocytes of the erythroblastotic infant but, in addition, survive. On the contrary, transfused Rh positive cells are totally destroyed within three days. Evidence of the superiority of Rh negative over Rh positive blood has come from workers in Great Britain, Canada and South America as well as from workers in this country. It seems, therefore, unsound to advocate the introduction of Rh positive cells, since the cellular débris resulting from their certain destruction may embarrass an already overburdened infant's system. Certainly such a rationale is not indicated by the experience of consultants in hematology who deal with hemolytic diseases in all ages.

The administration of oxygen is undoubtedly of value in the presence of anoxic anoxia; on the other hand, transfusion of viable erythrocytes seems the appropriate therapeutic approach to the problem of anemic anoxia. In our experience intravenous glucose and saline solutions are not usually indicated as they tend to aggravate the edema and further embarrass the circulation. The multiple syringe method of transfusion is often a more difficult method than gravity or a simple gravity plus pressure set for tiny infants with poor peripheral veins.

Finally, the statement is made that early delivery of infants with probable erythroblastosis is ineffectual. Though it is certainly not desirable to impose too great prematurity on such a child, there is no doubt that two to four weeks of prematurity is a much slighter risk than the same period of time spent by the fetus in an environment where an increasing antibody absorption from the mother's circulation may produce more severe damage to the erythrocytes and secondarily to other important systems of the body. Statistics gained in the study of more than thirty families in which a previous child has succumbed to erythroblastosis support the opinion that earlier delivery of the next infant, especially in the face of an increasing antibody production on the part of the mother, results in a larger number of living children recovering from the disease. This occurs in spite of the well known increasing chances for more severe involvement of the infant born to the mother who has been sensitized by earlier pregnancies.

LOUIS K. DIAMOND, M.D.
RONALD L. DENTON, M.D.
Boston.

To the Editor:—In the communication on the treatment of erythroblastosis fetalis in THE JOURNAL, April 28, Dr. Ruth Renter Darrow emphasized certain aspects of the condition which have been neglected. It is conceivable that, in cases in which an Rh negative donor cannot be found, Rh positive blood, given slowly and under constant observation to an erythroblas-

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totic child, may be the lesser evil as compared to no transfusion. So far as these cases go, her statement that no infant should die while Rh negative blood donors are being sought may be a useful antidote to excessive and inflexible dogmatism on the need for Rh negative donors.

However, situations in which the use of Rh positive blood is justified would seem to be exceedingly rare. In view of the existence of much misapprehension about the mechanism of erythroblastosis due to Rh incompatibility, it is perhaps more necessary at present to emphasize the importance of making every effort to find Rh negative donors.

Furthermore, one may question the advisability of using Rh positive blood "by preference, because of its sparing action on the infant's red cells." The author also states that "with Rh positive blood there is no danger . . . of flooding the circulatory system with an excess of erythrocytes, since the Rh positive cells absorbing the isoantibodies are destroyed."

The harm done by transfusions in which the injected cells are destroyed is not, as would seem to be implied by the author's statements, entirely or principally due to deprivation of the destroyed cells. The most serious dangers from destruction of transfused red cells are (1) kidney damage due to hematin precipitated from the dissolved hemoglobin freed by hemolysis of the transfused cells and (2) thrombosis of capillaries by agglutinated red cells or their stromas. This damage may be fatal or, if the patient survives, may leave irreversible lesions. Hence the hypothetic "sparing action on the infant's red cells" is far more than counterbalanced by the amply demonstrated dangers of intravascular hemolysis.

It is also questionable that "a 'toxic' baby with a red cell count of 4,000,000 per cubic millimeter of blood is therefore in far greater need of an immediate transfusion than a nontoxic baby with a count of 2,000,000." If the baby with a count of 4,000,000 is in a state of oligemic shock, plasma would be the indicated treatment in preference to whole blood, while the child with a count of 2,000,000 red cells would in most cases be in urgent need of replacement of the lost red blood cells with Rh negative cells resistant to hemolysis by the anti-Rh agglutinins in the child's plasma. The mother's blood cells can be used, provided they are separated from the plasma and are of a compatible group.

A. F. LIBER, M.D., Amsterdam, N. Y.
Director, Montgomery County Laboratory.

PSYCHOPATHOLOGY AND TERMINOLOGY

To the Editor:—There is a lamentable tendency in current psychiatry to use the label constitutional psychopathic inferior almost with complete abandon. It seems that in many instances it even becomes a means of projecting on the victim of the diagnosis the prejudices and inferiorities of the psychiatrist.

The very term C. P. I. implies a condition or state from birth, and yet many are so labeled who have never manifested any form of inadequacy until past maturity.

Dr. W. C. Alvarez in his article Constitutional Inadequacy in THE JOURNAL, July 4, 1942, page 782, column 2, lines 25 to 27, states that "like the walls of a defective tire they are likely to hold well for some time before they blow out."

No histologic, biologic or psychodynamic basis is given for this comparison of the human being to a tire.

But what is more important than the lack of basis for the statement is the fact that here we have a prominent psychiatrist finally pinning the label "constitutional inadequacy" on the psychoneuroses. Here is an example of psychotherapeutic defeatism given the dignity of a respectable paternity.

Quoting further, he states that "in some cases poor materials seem to have gone into almost every organ of the body," which again places all the emphasis on the individual's constitutional equipment.

Yet psychiatry has demonstrated that such conditions as chronic delinquency and chronic criminality can be eliminated at their ontogenetic sources. Certainly the neurosis, a much less profound and less inrooted condition, can be approached prophylactically as well as therapeutically.

To advise these patients to "hoard their energies and find a job that can be done without too much fatigue" is, in fact, to increase their feelings of inadequacy, frustration and insecurity, and encourage a chronic invalid attitude which is the very thing that should be avoided psychotherapeutically. It also discourages any efforts on the part of society to seek the elimination of the causes of these disorders and ignores the numerous instruments of therapeusis, from psychoanalysis to personal readjustments.

Further, no one who has followed the psychically ill can fail to observe how often just the elimination of a chronic focus of infection will achieve the complete psychic restitution of the individual. Often, simply the modification of external factors will do it.

Heredity, of course, is important, very important, but we have seen numerous examples of individuals with excellent inherited factors finally break down into neurosis because of overwhelming ontogenetic traumas. On the other hand, there are numerous instances of bad hereditary factors submerged and completely inactivated by the combination of a favorable environment and the felicitous course of events.

It is therefore evident that the neurosis is too dynamic, has too many interrelated causative and influencing factors and is too complex in its very nature to justify its being swept into the dumping ground of constitutional inadequacy.

Such a term is too general and devoid of psychiatric structure, as well as an injustice to the psychically ill.

MYER E. SEGAL, M.D.
State of Connecticut Veterans Home,
Rockey Hill, Conn.

BENIGN PNEUMONOCONIOSIS

To the Editor:—In our paper on Benign Pneumonoconiosis (THE JOURNAL, March 24, p. 701) there appears the statement that "advanced silicosis with conglomerate nodulation is often a disabling disease, and when silicosis is complicated by tuberculosis it is fatal." In the summary we state that "advanced silicosis is usually disabling and, when complicated with tuberculosis, it is fatal."

The statement that advanced silicosis when complicated with tuberculosis is fatal has been questioned, and properly so, because there are many patients with advanced silicosis who have inactive pulmonary tuberculosis without pronounced disability. We mean, of course, that advanced silicosis is fatal when complicated by active, progressive pulmonary tuberculosis.

EUGENE P. PENDERGRASS, M.D.
SIMON S. LEOPOLD, M.D.,
Philadelphia.

WRITE TO A BOY IN SERVICE

To the Editor:—At the suggestion of several pharmaceutical representatives who have called at the office I wish to report a little venture that my associates and I have made in our waiting room. We have a little stand on which are stamped V-Mail and pen and ink with a small sign inviting our patients to write a letter to a boy in service while waiting for their turn to see the doctor.

WALTER C. COREY, M.D., Chardon, Ohio.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Right of Physician in Kentucky to Receive Fee from County for Executing and Filing Birth or Death Certificate.—The treasurer of Bell County, Ky., questioned his legal right to pay (1) physicians or midwives in attendance at the birth of a child a fee of 25 cents for each birth certificate that they executed and filed as required by statute or (2) physicians the same fee for each death certificate made and filed by them. The applicable Kentucky statute reads in part as follows:

"Each local registrar, physician or registered midwife shall be entitled to be paid the sum of twenty-five cents for each birth certificate and each death certificate properly and completely made out and registered with or reported by him, and correctly copied and duly returned to the Division of Vital Statistics. . . . All amounts payable to registrars, physicians or midwives under this section shall be paid by the treasurer of the county in which the registration districts are located, upon certification by the Division of Vital Statistics. The Division of Vital Statistics shall annually certify to the treasurers of the several counties the number of births and deaths registered, with the names of the local registrars and the amounts due each at the rates fixed herein." (K R S sec. 213.150.)

Thirty physicians of that county instituted an action against the county treasurer seeking an injection to require him to pay them such fees. From a judgment for the physicians the county treasurer appealed to the Court of Appeals of Kentucky.

The sole question to be determined here, said the appellate court, is whether a comma in the statute quoted should be regarded as the word "and." As noted, the statute specifically provides *"Each local registrar, physician or registered midwife shall be entitled to be paid the sum of twenty-five cents for each birth certificate and each death certificate properly and completely made out and registered"* in accordance with the terms of the statute. Literally the statute provides for the payment of only one of the three classes, the comma in such disjunctive clauses ordinarily taking the place of "or." The original statute was an Act of 1910 (chapter 37, sec. 20) and was in the same form. The difficulty here is not one of punctuation, which is ordinarily a minor element in construing a statute. The question is whether the word "and" should connect "registrar" and "physician or registered midwife." Not the literal language but the true intention or will of the legislature is the law. That is what the courts endeavor to ascertain and declare and what the executive departments must obey. All rules of statutory construction have that in view. Since words are used to express an idea, if that idea is manifest, although ineptly or obscurely expressed, no usurpation is committed by declaring the legislative intent and no violence done by supplying, deleting or changing words or their arrangement in clarification. The general intent is the key to each part of an act. Often its purpose and its entire tenor disclose the inadvertent or careless misuse or omission of a word or phrase, and the courts are justified in correcting or supplying the proper language. As stated in Lewis' Sutherland on Statutory Construction, section 397:

The popular use of "or" and "and" is so loose and so frequently inaccurate that it has infected statutory enactments. While they are not treated as interchangeable, and should be followed when their accurate reading does not render the sense dubious, their strict meaning is more readily departed from than that of other words, and one read in place of the other in deference to the meaning of the context.

The statute before us, continued the court, imposes the duty on either the physician attending a birth or the midwife, as the case may be, of making out the certificate and filing it with the registrar. On the face of it, it cannot be supposed that he or she should receive no compensation for this public service, which is basic and more laborious than the duty imposed on the registrar, who simply records the certificate and advises the state registrar. It is to be noted that the fee is payable "for" each certificate "properly and completely made out and registered." The registrar does not execute certificates of this sort. If there were no intention that the physician or midwife, who is charged with the duty of making out the certificates, should be paid, the natural inquiry arises Why should they have been mentioned at all? On the other hand, why should the Division of Vital Statistics be required to certify to the county treasurer each year the names of the registrar only? The case in which the constitutionality of the original act was declared involved the decision that a local registrar is entitled to collect this fee from the county. *Furlong* v. *Darnaby*, 206 Ky. 63, 257 S. W. 707; second appeal, *Darnaby* v. *Furlong*, 216 Ky. 475, 287 S. W. 913. As between conflicting consequences, a statute will be construed so as to make it equitable and just rather than inequitable and unjust. It would have been unjust not to provide compensation for the physician or midwife for making out the certificate but to provide payment of the one who records it. The same section, K R S 213.150, expressly declares that none of those persons can charge "any member of a family in which a birth or death may occur" for such services.

We cannot escape the conclusion that the trouble arises in this case, said the court, from mere faulty formulation of the phrase, and that the comma was inadvertently or intended to be used instead of the word "and." Therefore the trial court rightly construed the statute to provide that both the local registrar and the physician are entitled to have the county treasurer pay them the stipulated fees. If a registered midwife has performed the service of the physician, she should receive the fee.

The judgment in favor of the physicians was accordingly affirmed.—*Asher, Treasurer, v. Stacy, 185 S. W. (2d) 958 (Kentucky, 1945).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, June 23, page 614.

BOARDS OF MEDICAL EXAMINERS

ALASKA: Juneau, September. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

ARIZONA: * Phoenix, July 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: *Oral.* Los Angeles, Aug. 11. *Written.* San Francisco, July 9-12. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

CONNECTICUT: * *Homeopathic.* New Haven, July 10-11. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven. *Medical. Examination.* New Haven, July 10-11. *Endorsement.* New Haven, July 24. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: *Examination.* Dover, July 10-12. *Reciprocity.* Dover, July 17. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

IDAHO: Boise, July 10. Dir., Bureau of Occupational Licenses, Miss Agnes Barnhart, 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, Aug. 28-30. Sec., Board of Medical Registration & Examination, Dr. W. C. Moore, 301 State House, Indianapolis 4.

MAINE: Augusta, July 10-11. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, July 10-13. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F. State House, Boston.

MONTANA: Helena, Oct. 1-3. Sec., Dr. O. G. Klein, First Nat'l. Bank Bldg., Helena.

NEVADA: *Reciprocity.* Carson City, Aug. 6. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW MEXICO: * Santa Fe, Oct. 8-9. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NORTH DAKOTA: Grand Forks, July 3. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement.* Columbus, July. Sec. Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * Portland, July 25-27. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland 4.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 10-13. Act. Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

RHODE ISLAND: * July 5-6. Chief, Division of Examiners, Mr. Thomas Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: * Pierre, July 17-18. Sec., Medical Licensure, State Board of Health, Dr. Gilbert Cottam, State Capitol, Pierre.

TEXAS: Houston, July 17-19. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

WASHINGTON: * Seattle, July 16-18. Sec., Department of Licenses, Miss Nell Adams, Olympia.

WEST VIRGINIA: Charleston, July 5-7. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston 5.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

MICHIGAN: Ann Arbor and Detroit, Oct. 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

NEBRASKA: Omaha, Oct. 2-3. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln 9.

OREGON: Portland, July 7. Sec., Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Aug. 15. Chief, Division of Examiners, Mr. Thomas Casey, 366 State Office Bldg., Providence.

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Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

209:421-560 (April) 1945

Complications Arising in Donors in Mass Blood Procurement Project. Mary H. Boynton and E. S. Taylor.—p. 421.
*Use of "Modified Globin" from Human Erythrocytes as Plasma Substitute: Preliminary Report. M. M. Strumia, F. W. Chornock, A. D. Blake and W. G. Karr.—p. 436.
Hemophilia-like Disease in Female, with Note on Clotting Time of Recalcified Plasma. F. W. Madison and A. J. Quick.—p. 443.
Cardiac Hypertrophy and Extramedullary Erythropoiesis in Newborn Infants of Prediabetic Mothers. H. C. Miller.—p. 447.
*Acute Myocarditis in Influenza A Infections: Two Cases of Nonbacterial Myocarditis, with Isolation of Virus from Lungs. M. Finland, F. Parker Jr., Mildred W. Barnes and L. S. Joliffe.—p. 455.
Provocative Prolongation of PR Interval in Rheumatic Fever. R. Gubner, M. Szucs and H. E. Ungerleider.—p. 469.
Primary Influence of Basal Vascular Tone on Development of Postocclusive Collateral Circulation and in Selecting Patients for Sympathectomy. M. Naide and Ann Sayen.—p. 478.
Fatal Case of Cerebral Coccidioidomycosis with Cultural Studies. H. G. Schlumberger.—p. 483.
Pneumococcic Pneumonia Resembling Primary Atypical Pneumonia. E. Racker, S. P. Rose and A. O. Tumen.—p. 496.
Roentgen Therapy of Boeck's Sarcoid. E. A. Pohle, L. W. Paul and Elizabeth A. Clark.—p. 503.
*Treatment of Tularemia with Intravenous Bismuth Sodium Tartrate. W. W. Jackson.—p. 513.
Vitamin Content of Liver Extracts for Parenteral Use: Comparison of Crude and Concentrated Preparations. G. W. Clark.—p. 520.

"Modified Globin" from Erythrocytes as Plasma Substitute.—Strumia and his associates prepared a globin from human erythrocytes which can serve as a plasma substitute, because it possesses some of the properties of plasma, more specifically a high colloidal osmotic pressure. It is estimated that every year nearly 1.5 billion cubic centimeters of packed red cells may be made available from the preparation of plasma for the armed forces and for the civilian population. By a relatively simple process this hemoglobin can be transformed into a "modified globin." From the amount of red cells mentioned 375,000 Kg. of globin can be prepared with an osmotic power about twice as great as an equivalent amount of plasma proteins, that is, an osmotic equivalent of about 12.5 million liters of citrated plasma. From a blood donation it is possible to obtain about 250 cc. of plasma and about 24 Gm. of globin. This globin is equivalent in osmotic power to about 600 cc. of plasma. Thus from a single 500 cc. donation of blood it is possible to obtain the osmotic equivalent of about four donations. Modified globin is safe and capable of replacing lost blood volume in cases of severe secondary shock. A total of 210 intravenous injections of globin have been administered to 108 human beings. The largest single dose has been 57 Gm. The largest total amount administered to any one patient has been 192 Gm. Several patients have received repeated injections of globin without exhibiting reactions.

Acute Myocarditis with Influenza A Infections.—A woman aged 34 who in December 1942 had a mild illness that might be construed as clinical influenza became acutely ill early in April 1943 and died in six days. The fatal illness was accompanied by fever, chills, extreme prostration and progressive dyspnea. There was evidence of myocardial weakness, and diffuse signs appeared in the lung bases before death. Clinically the findings were interpreted as those of a rapidly progressing primary atypical pneumonia. Necropsy revealed a minimum of pathologic alterations in the lungs, but the heart showed an extreme degree of acute diffuse myocarditis. Isolation of a virus from the lungs of this patient and its identification as influenza A makes it a very unusual case. It led to further search for similar cardiac lesions in other cases of influenza. A second patient, a man aged 39, presented the aspects of an acutely fatal pneumonia complicating influenza A. The virus obtained from the lungs showed characteristic lesions of a virus infection. The lesions in the heart were slight and limited in extent and were discovered only after careful search. They were similar in character to those seen in the first case. Finland and his associates believe that the myocardial lesions in these cases are the result of infection with influenza A virus.

Intravenous Bismuth Sodium Tartrate in Tularemia.—In the past three years Jackson has observed 61 cases of tularemia from Arkansas, Oklahoma, Missouri, Kansas, Louisiana and Texas. In 57 cases the source of infection was a tick bite; 1 was a squirrel bite; 3 were hand infections acquired by skinning rabbits. Every patient with tularemic tick bite on the lower extremity developed a bubo on the corresponding side. Two presented lesions on the penis, 1 an ulcer on the dorsal corona, the other an ulcer on the anterior surface at the base of the shaft. One of these developed a right-sided bubo, the other a left-sided one. Twenty-one cases with lesions on the arms or upper torso all showed an axillary adenitis, but in only 2 did the nodes progress to suppuration. No reason is apparent as to why the inguinal lymph nodes break down and the axillary do not. Epitrochlear lymph nodes suppurated in 2 cases in which the forearm presented the initial lesion. The initial chill and malaise occurred between seventy-two and one hundred and twenty hours after discovery of the tick and its removal from the skin. Agglutination tests were done in all cases. All but 2 showed positive titers of 1:360 or over. Jackson's experience with the Foshay specific antiserum has been disappointing, and more recently a trial of several of the sulfonamide compounds resulted in no clinical improvement whatever. Penicillin was ineffective. All patients were given intravenous injections of the bismuth solution at the time of the first visit, which was usually on the third or fourth day after the patient was aware of being sick. Diagnosis must be made and treatment started without the aid of the laboratory. Usually the characteristic clinical onset and the history of exposure to probable infection will supply the necessary evidence. During the last two years Jackson has used a solution of bismuth sodium tartrate especially prepared for intravenous use. The dose is estimated on the basis of 1 cc. per hundred pounds of body weight, but in children a relatively large dose (1 cc. for 50 pounds) may be given. The average number of injections required for cure is seven. Contrary to prevalent views, the intravenously administered bismuth is quite free from serious untoward manifestations. No death has occurred in this series of 61 cases. There was prompt recovery in all cases treated by intravenous injections of a solution of bismuth sodium tartrate, suggesting that the use of this solution is a specific procedure in the treatment of tularemia.

American Journal of Ophthalmology, Cincinnati

28:355-449 (April) 1945

Recurrent Erosion of Cornea. P. A. Chandler.—p. 355.
Electrical Sensitivity of Eye in Some Optic Nerve Diseases Resulting from Craniocerebral Traumata. S. V. Kravkov and A. N. Mursin.—p. 363.
Improved Treatment for Chemical Burns of Eye. L. Weston.—p. 370.
*Visual Symptoms Caused by Digitalis. F. D. Carroll.—p. 373.
Complete Congenital Pigmentation of Optic Disk. W. Moehle.—p. 377.
Penicillin in Treatment of Perforating Ocular Injuries and in Uveitis. R. G. Scobee.—p. 380.
Congenital Glaucoma and Cataract, Bilateral; Goniotomy and Needling: Case Report. T. D. Allen.—p. 388.
Contribution to Theory of Binocular Vision Supported by 3 Cases of Latent Nystagmus. A. Posner.—p. 392.

Visual Symptoms Caused by Digitalis.—Carroll reports visual symptoms that occurred in 6 patients who were taking digitalis. In 3 patients general symptoms of digitalis intoxication caused the patients to return to the internist for advice, but the other 3 came directly to the ophthalmologist because of visual disturbances. None of these suspected digitalis as the cause and none gave a history of taking digitalis until they were specifically questioned regarding it. The visual symptoms consisted in colored vision—chiefly white, green, yellow or red—flashes of light, positive colored scotomas and other visual hallucinations. There was no change in the visual acuity or

fields of these patients. It is suggested in the literature that if the intoxication is sufficiently profound a temporary cortical type of blindness may result. This condition may occur in patients receiving what is considered a normal dosage of the drug and may be the only symptom present. Recovery takes place within two weeks after the digitalis is stopped.

American Journal of Psychiatry, New York

101:573-716 (March) 1945. **Partial Index**

General Paresis in Senility: Critical Review of Literature and Clinicopathologic Report of 6 Cases. S. Arieti.—p. 585.
Studies on Corpus Callosum: IV. Diagonistic Dyspraxia in Epilepties Following Partial and Complete Section of Corpus Callosum. A. J. Akelaitis.—p. 594.
Reconditioning and Rehabilitating Program in Army Hospitals. W. E. Barton.—p. 608.
War Neuroses in Flying Personnel Overseas and After Return to U. S. A. R. R. Grinker and J. P. Spiegel.—p. 619.
Psychiatric Casualties in Royal Canadian Navy. M. Wellman and J. F. Simpson.—p. 625.
Course in Psychologic First Aid and Prevention: Preliminary Report. D. Blain, P. Hoch and V. G. Ryan.—p. 629.
Integrated Medicopsychologic Program at United States Coast Guard Academy: Preliminary Report. R. H. Felix, D. C. Cameron, J. M Bobbitt and S. H. Newman.—p. 635.
Neuropsychiatry in U. S. Marine Corps, Women's Reserve: I. Methods and Procedures in Neuropsychiatric Selection of Recruits. P. Solomon, M. Brown and M. R. Jones.—p. 643.
Psychiatric Aspects of Officer Selection. W. A. Hawk.—p. 655.
Selective Service Violators. C. G. Southard and J. R. Hurley.—p. 661.
Hypnotic Technics for Therapy of Acute Psychiatric Disturbances in War. M. H. Erickson.—p. 668.
Color Blindness in Psychoses. H. M. Kaplan and R. J. Lynch, with technical assistance of M. S. Weinstein and E. Manning.—p. 675.

American Journal of Public Health, New York

35:299-432 (April) 1945. **Partial Index**

Review of Evidence as to Nutritional State of Children in France. H. C. Stuart.—p. 299.
Health Services for Migrant Farm Families. F. D. Mott.—p. 308.
War and Birth Rate: Brief Historical Summary. L. I. Dublin.—p. 315.
Recent Trend of Birth Rate. A. W. Hedrich.—p. 321.
Effect of Increased Birth Rate on Future Population. P. K. Whelpton. —p. 326.
Nutrition and Its Relationship to Complications of Pregnancy and Survival of Infant. B. S. Burke.—p. 334.
Army Water Supplies in Foreign Areas. J. B. Baty.—p. 347.
Lessons Learned from Internal Security Program of War Department. W. H. Weir.—p. 353.
Application of Phosphatase Test to Cheese: I. Preliminary Report on Cheddar Type Cheese. H. Scharer.—p. 358.
Factors in Army Water Quality Control. W. A. Hardenbergh.—p. 361.
*Laboratory Criteria of Cure of Typhoid Carriers. R. F. Feemster and Helen M. Smith.—p. 368.
Insect Problems in World War II, with Special References to Insecticide DDT. F. C. Bishopp.—p. 373.

Cure of Typhoid Carriers.—Feemster and Smith say that as various chemical and biologic agents have been tried and found to be failures it has been necessary to return repeatedly to cholecystectomy as the only method which regularly cures an appreciable number of carriers. The authors review observations on 68 typhoid carriers operated on in Massachusetts between 1924 and 1944. There have been 63 cures and 5 failures. Medical treatment, even with sulfonamide compounds, cannot be relied on to eliminate the gallbladder focus. The authors have had 4 failures with sulfaguanidine and succinylsulfathiazole. To establish that a person is a bile carrier and supposedly a gallbladder carrier, it is necessary to demonstrate typhoid bacilli in the bile by duodenal drainage prior to operation or by culture taken from the gallbladder at the time of operation. The criteria of cure should consist of a careful bacteriologic follow-up for not less than twelve months of negative stool cultures and at least one negative bile. Cholecystectomy is still the only effective method of curing typhoid carriers.

American Review of Tuberculosis, New York

51:295-392 (April) 1945

Tuberculosis According to Age, Sex, Family History and Contact. R. R. Puffer, H. C. Stewart and R. S. Gass.—p. 295.
Passive Transfer of Specific Tuberculoimmunity and Specific Tuberculin Allergy. H. J. Corper and M. L. Cohn.—p. 312.
"Beriberi Heart" in Tuberculous Patient. J. E. Farber and D. K. Miller.—p. 315.
Anatomic Studies on Human Tuberculosis: XVI. Progressive Reinfection. K. Terplan.—p. 321.

Annals of Otol., Rhin. and Laryngology, St. Louis

54:5-240 (March) 1945. **Partial Index**

Bronchogenic Carcinoma: Analysis of 175 Proved Cases. P. H. Holinger, H. J. Hara and E. F. Hirsch.—p. 5.
Malignant Exophthalmos. L. A. Schall and D. J. Reagan.—p. 37.
Nasal Allergy for Practicing Rhinologist: I. Pathologic and Theoretical Considerations Underlying Nasal Allergy. G. E. Shambaugh Jr.—p. 43.
Postwar Deafness, a Challenge to the Otologist. B. J. McMahon.—p. 61.
Aerosinusitis—Résumé. P. A. Campbell.—p. 69.
Local Infiltration of Penicillin Solutions in Peritonsillar and Pharyngomaxillary Spaces. A. J. Cone.—p. 84.
Cilia and Penicillin: Laboratory Note. A. W. Proetz.—p. 94.
Bronchography as Diagnostic Aid in Chest Disease. G. S. McReynolds Jr. and F. W. Shelton.—p. 114.
Individualization in Management of Carcinoma of Maxillary Sinus. M. F. Snitman.—p. 125.
Significance of Hoarseness. W. F. Zinn.—p. 136.
Penicillin and Infections of Ear, Nose and Throat. M. H. Mothersill. —p. 166.
Foreign Bodies of Maxillary Sinus. J. C. Howard Jr.—p. 186.

Archives of Pathology, Chicago

39:221-280 (April) 1945

Morphologic Alterations of Neuron Due to Tumor Invasion. K. Stern and G. L. Odom.—p. 221.
*Morbid Anatomy of Typhus as Seen in Recent Guatemalan Epidemic: Observations on Disease. A. Golden.—p. 226.
Genetic Analysis of Induction of Tumors by Methylcholanthrene: VIII. Two Mutations Arising in Mice Following Injection of Methylcholanthrene. L. C. Strong.—p. 232.
Changes in Uterus After Eradication of Endometrial Adenocarcinoma by Radiotherapy, with Particular Reference to Infarct-like Radionecrotic Plaque in Lining. J. F. Sheehan, H. E. Schmitz and Janet Towne.—p 237.
Healing of Wounds in Skin of Mice Painted with 20-Methylcholanthrene. M. Silberberg and Ruth Silberberg.—p. 257.
Presacral Cyst Apparently Arising from Neurenteric Canal in Newborn Infant. W. W. Brandes and J. B. Sutton.—p. 265.
*Coronary Arteriosclerosis and Myocardial Infarction as Studied by Technic. J. B. Holyoke.—p. 268.
Histologic Diagnosis of Rabies. E. Herzog.—p. 279.

Morbid Anatomy of Typhus.—In April 1944 epidemic typhus broke out in a hospital for patients with mental disease in Guatemala City. Numerous blocks of necropsy tissue were forwarded to the Army Medical Museum in Washington, D. C., and examined by Golden. The lesions of louse borne epidemic typhus as seen in 10 fatal cases in this outbreak may be classified in two groups. One group consists of the specific vascular lesions of rickettsial infection. The vascular lesions appeared to be most pronounced in the central nervous system and the testes, and they were responsible apparently for a certain degree of destruction or inflammation of the regional tissues. The other group of lesions included interstitial myocarditis, meningitis, focal cellular necrosis of the adrenal glands, interstitial nephritis, hemoglobinuric nephrosis and focal necroses of the liver and spleen. The spinal cord showed lesions identical with those of the cerebral hemispheres, the cerebellum and the brain stem. The lesions of the pons and the medulla were the most severe. The state of collapse may be correlated with focal necrosis and cytolysis of the adrenal glands, although one must also consider interstitial myocarditis and the lesions of the central nervous system in the pathogenesis of that state. Hemoglobinuric nephrosis is of significance because similar lesions are seen in severe burns, massive crushing of muscles and certain shocklike states. Apparently, epidemic typhus may be added to the list of diseases in which interstitial nephritis may be encountered.

Coronary Arteriosclerosis and Myocardial Infarction.—Holyoke shows that the injection and dissection technic of Schlesinger has made possible a more accurate concept of the significance of sclerosis of the coronary arteries in relation to myocardial disease. He studied an unselected series of 70 adult hearts at the necropsy service of the Mary Hitchcock Memorial Hospital, Hanover, N. H., by means of the Schlesinger technic. After injection of the vessels and x-ray examination of the heart the coronary arteries were dissected, and all occlusions and narrowings were recorded as to location and length of the portion of vessel involved. In narrowing without occlusion, the degree of constriction was estimated. Occlusions of the coronary arteries were demonstrated in 12 of the 70 hearts. In these 12 hearts thirty-one points of obstruction were demonstrated. Thirteen were in the main stems of the three principal coronary arteries. Eighteen were in the large branches. Inter-

arterial anastomoses were demonstrated in all hearts with pronounced arteriosclerotic narrowing. Only in the presence of hypertrophy were such anastomoses demonstrated in other hearts. In 3 of 11 hearts with old occlusions of the coronary arteries there were no old infarcts. In 2 of 5 hearts with recent occlusions of the coronary arteries there were no corresponding recent infarcts. In 1 of 4 hearts with recent infarcts there was no recent occlusion. Grossly recognizable scars were present in the myocardium of 26 of the 70 hearts. Data from this work and from the literature emphasize that coronary arteriosclerosis is only one of the many factors which may be responsible for the anatomic changes and the symptoms resulting from myocardial anoxia.

Archives of Physical Medicine, Chicago

26:197-250 (April) 1945

Experimental Studies on Electrical Reactions of Denervated Skeletal Muscles. O. L. Huddleston.—p. 197.
Physical Restoration in Vocational Rehabilitation. D. A. Clark.—p. 206.
Rehabilitation in the Navy. H. H. Montgomery.—p. 214.
Practical Application of Physical Therapy in Rehabilitation. W. B. Snow.—p. 220.
Physical Medicine in Rehabilitation of Veteran of World War II. H. C. Mitchell.—p. 227.
Spa Therapy of Arthritis and Rheumatic Disorders. F. J. Scully.—p. 233.

Arizona Medicine, Phoenix

2:71-136 (March) 1945

Ganglioneuroma of Mediastinum. H. Randolph.—p. 95.
Symposium on Treatment of Syphilis: "Modern Routine Treatment of Syphilis." L. G. Jekel.—p. 97.
Rapid Treatment Methods. P. S. Armour.—p. 100.
Treatment of Neurosyphilis. L. Saxe.—p. 101.
Spontaneous Subcutaneous Emphysema Occurring During Labor. M. Cohen.—p. 105.

California and Western Medicine, San Francisco

62:153-242 (April) 1945

Radiologic Aspects of Certain Tropical Diseases. L. H. Garland.—p. 158.
Study of Pneumonia in San Francisco, 1943-1944. G. F. Warner, J. G. Li and S. M. Farber.—p. 161.
Arterial Spasm and Fat Metabolism: Their Relation to Certain Diseases and to Certain Members of Vitamin B Complex. G. Selfridge.—p. 163.
Is the Organized Medical Profession Antisocial? L. Porter.—p. 163.
Penicillin Treatment for Gonorrhea. D. W. Atcheson.—p. 164.
Prenatal Blood Tests and Congenital Syphilis. G. M. Uhl and R. L. Kaufman.—p. 168.
Arteriosclerotic Gangrene, with Special Reference to Amputations Below the Knee. W. Scott.—p. 170.
Primary Cancer of Lung. S. M. Farber and D. J. Edwards.—p. 172.
Edema of Eyelids in Trichinosis. P. N. Pierose and E. M. Butt.—p. 174.
Psychiatric Casualties. Pearl S. Pouppirt.—p. 176.

Florida Medical Association Journal, Jacksonville

31:445-494 (April) 1945

Bilateral Dactylomegaly. R. R. Killinger.—p. 471.
Abdominal Pregnancy: Report of Case with Living Baby and Mother. M. J. Rose.—p. 475.

Journal Industrial Hygiene & Toxicology, Baltimore

27:95-122 (April) 1945

Physiologic Response of Animals to Certain Chlorinated Mononitroparaffins. W. Machle, E. W. Scott, J. F. Treon, F. F. Heyroth and K. V. Kitzmiller.—p. 95.
*Intervertebral Disk Injury: Analysis from an Industrial Standpoint. H. C. Marble and W. A. Bishop.—p. 103.
Composition of Industrial Dusts: I. Foundry Dusts. C. R. Williams. —p. 110.
Collection of Fluoride Fumes in Air. C. R. Williams and L. Silverman.—p. 115.
Benzol Poisoning—Delayed: Case Report. Adelaide R. Smith.—p. 118.

Intervertebral Disk Injury.—Marble and Bishop attempt to present impartially some of the facts relating to intervertebral disk injury from the standpoint of an industrial surgical clinic. The sources of the material are the records of one of the largest insurance companies in the United States interested in workmen's compensation. The facts as gathered represent a cross section of the work of both neurosurgeons and orthopedic surgeons throughout the country. Compensable cases represent probably the most important group, since back injury in industry is frequent and the results of therapy vital to the future of the patient. Of 496 industrial patients suspected of having sustained herniation of the intervertebral disk 92, or approximately one fifth, were operated on, while four fifths received other therapy. The 92 cases are analyzed from the standpoint of cost, disability, cause and diagnostic criteria Less than 50 per cent of cases show a favorable result.

Journal of Lab. and Clinical Medicine, St. Louis

30:293-394 (April) 1945

Quantitative Determination of Serum Bilirubin, with Special Reference to Prompt Acting and Chloroform Soluble Types. H. Ducci and C. J. Watson.—p. 293.
Pathology of Experimental Choline Deficiency in Dogs. F. R. Dutra and J. M. McKibbin.—p. 301.
Recovery from Fulminating Meningococcic Infection with Myocarditis Proved by Electrocardiography. J. N. Rappaport and M. Zuckerbrod. —p. 307.
Diasone: Its Toxicity and Therapeutic Effectiveness. G. W. Raiziss and J. C. Moetsch.—p. 317.
Polycythemia Produced by Cobalt in Duck: Hematologic and Pathologic Study. J. E. Davis, A. W. McCullough and R. H. Rigdon.—p. 327.

Journal-Lancet, Minneapolis

65:133-164 (April) 1945

Small Film Radiography in Industrial Groups. H. E. Hilleboe and A. W. Newitt.—p. 133.
Miliary Tuberculosis vs. Typhoid Fever: Case Reports. W. E. Peterson and A. Canfield.—p. 138.
Tuberculin Test and Health Education. T. L. Harrington.—p. 139.
Survey of Tuberculosis Observed at Freeman Clinic, 1934-1944, and Related Statistics. G. L. Hacker.—p. 140.
Continuation of Mantoux Program in Rural Minnesota. L. S. Jordan. —p. 142.
Unusual Case of Primary Carcinoma of Liver Associated with Diabetes Mellitus, Pulmonary Tuberculosis and Tuberculous Empyema. S. G. Clayman.—p. 144.
Control and Eradication of Animal Tuberculosis. A. E. Wight.—p. 146.
Tuberculosis Deaths Among Children. Ruth E. Boynton.—p. 148.
Tuberculosis of Cervical Lymph Nodes. S. S. Cohen.—p. 151.
Syphilis of Lung. P. A. O'Leary and O. E. Ockuly.—p. 154.

J. Neuropathology & Exper. Neurology, Baltimore

4:99-194 (April) 1945

Effects of Bilateral Simultaneous Subcortical Lesions in the Primate. F. A. Mettler.—p. 99.
Paramyoclonus Multiplex: Clinical-Pathologic Considerations. G. B. Hassin and R. D. Kepner.—p. 123.
Studies on Ameboid Motion and Secretion of Motor End Plates: V. Experimental Pathologic Effects of Traumatic Shock on Motor End Plates in Skeletal Muscle. E. J. Carey, L. C. Massopust, W. Zeit, E. Haushalter and J. Schmitz.—p. 134.
Anatomic Defects and Pathologic Changes in Congenital Cerebral Aneurysms. F. M. Forster and B. J. Alpers.—p. 146.
*Primary Degeneration of Corpus Callosum (Marchiafava-Bignami's Disease). H. H. Merritt and A. D. Weisman.—p. 155.
Leukoencephalitis Associated with Purulent Leptomeningitis (Meningoleukoencephalitis). I. M. Scheinker.—p. 164.
Syndrome of Posterior Inferior Cerebellar Artery Resulting from a Metastatic Neoplasm. C. Davison and L. A. Spiegel.—p. 172.
Studies on Developmental Pathology: III. Disintegration in Nervous System of Normal and Maldeveloped Embryos. P. Gruenwald.—p. 178.
Simple and Reliable Trichrome Stain. G. L., Rasmussen, Margaret M. Powers and G. Clark.—p. 189.
Simple and Reliable Myelin Sheath Stain for Paraffin Sections. J. P. Mullen.—p. 192.

Primary Degeneration of Corpus Callosum.—Marchiafava and Bignami were the first to observe central necrosis of the corpus callosum in elderly Italian alcoholic addicts. Since their report in 1903 about 50 cases of the disease have been reported. Until recently most cases have been reported in native Italians. The first native American reported to have the disease had become addicted to crude Italian wine. Merritt and Weisman report 2 additional cases of Marchiafava-Bignami's disease. Both occurred in middle aged Italians, in at least one of whom a history of excess alcoholism could be established. Both patients had subsisted on grossly inadequate diets. The pathologic findings were limited to necrosis of the middle lamina of the corpus callosum in the first patient, but the second patient had extensive symmetrical lesions in the subcortical white matter of the hemispheres and middle cerebellar peduncles as well. The authors think that the clinical picture cannot be explained by the callosal lesion but requires postulation of a more diffuse cerebral disorder. They consider Marchiafava-Bignami's disease to be a form of chronic alcoholic encephalopathy for which an inadequate diet and prolonged alcoholism are necessary antecedents.

New Jersey Medical Society Journal, Trenton

42:105-128 (April) 1945

Mental Hygiene in New Jersey: Some Notes on Its Development. E. Frankel.—p. 107.
Respiratory Diseases in Tropics. I. L. Applebaum.—p. 111.

New York State Journal of Medicine, New York

45:677-816 (April 1) 1945

Tendogenetic Disease and Its Treatment with X-Rays. J. Borak.—p. 725.
*Lesions of Cervical Intervertebral Disk: Clinicopathologic Study of 22 Cases. J. Browder and R. Watson.—p. 730.
Report on Progress of Glaucoma Campaign During Past Three Years. M. J. Schoenberg.—p. 738.
Use of Bismuth in Treatment of Vincent's Infection. H. M. Cox and J. H. Hodas.—p. 741.

Lesions of Cervical Intervertebral Disk.—From a review of the literature Browder and Watson collected only 69 verified cases with protrusion or herniation of a part of the cervical disk. In this paper they present their experiences with 22 cases in which this lesion had disturbed the function of the cervical spinal cord and/or nerve roots. Twenty-one were verified at operation and 1 at necropsy. Three different types of pathologic processes were encountered: (*a*) discrete, oval or rounded nodules projecting into the ventral vertebral canal, (*b*) true dorsal herniations of the nucleus pulposus and (*c*) ridges of annulus fibrosus surmounting hypertrophic bone at the margins of the adjacent vertebra. A negative Queckenstedt test does not exclude the presence of such a lesion. The operative mortality for the series was zero. One patient died before coming to operation.

Northwest Medicine, Seattle

44:71-102 (March) 1945

Nitrous Oxide Pentothal Anesthesia. C. P. Wangeman.—p. 73.
Clinical Management of Jaundice. K. E. Hynes.—p. 76.
Tropical Diseases of Increasing Importance. F. B. Queen.—p. 80.
Pinealoma, with Report of Case. W. B. Dublin.—p. 86.
Surgery in Infants and Children. M. S. Rosenblatt.—p. 88.
Diagnostic Standards for Rheumatic Fever. P. F. Guy.—p. 90.
Antimony Intoxication. T. E. P. Goeher.—p. 92.

44:103-138 (April) 1945

Ischemia as Cause of Cancer. R. W. Kullberg.—p. 107.
Rheumatic Pericardial Effusion Treated Successfully with Penicillin. J. R. Ridlon and A. B. Geyer.—p. 111.
Subtrochanteric Osteotomy for Treatment of Nonunion of Hip Fractures. J. D. Stewart.—p. 112.
Meckel's Diverticulitis with Regional Ileitis. L. Patricelli.—p. 117.
Serology of Babies. A. H. Van Dell.—p. 118.
Right-Sided Aortic Arch: Report of 6 Cases. W. Y. Burton, L. H. Smith Jr. and G. Heustis.—p. 118.
Tropical Diseases of Increasing Importance. F. B. Queen.—p. 122.

Ohio State Medical Journal, Columbus

41:297-392 (April) 1945

Circulatory Failure During Anesthesia. B. B. Sankey.—p. 321.
Still's Disease. S. H. Ashmun.—p. 324.
Medical Service, First Step to Rehabilitation. W. J. Zeiter.—p. 327.
Venography of Lower Extremities. E. C. Baker.—p. 330.
*Foreign Bodies in Gallbladder: Case Report. T. F. Heatley and G. W. Bascom.—p. 333.
Recent Front Line Experiences in China. W. L. Furste II.—p. 336.
Man, Then Gods. A. J. Elkins.—p. 340.
Cine Bronchoscopy: Kodachrome Visualization of Bronchial Pathology. P. H. Holinger.—p. 342.
Neurogenic Paralytic Ileus Due to Compression of Splanchnic Nerves by Aneurysm. E. Schafer.—p. 344.
Medical Curiosities—Oxygen Therapy, 1887. R. M. Watkins.—p. 346.

Foreign Bodies in Gallbladder.—A woman aged 61, whose chief complaint was pain in the left hypochondrium, loss of appetite and a loss of 25 to 30 pounds (about 12 Kg.) in the past year, had an acute episode of pain in the right subcostal area one year ago. A physician told her that she probably suffered from a chronic gallbladder disease and probably gallstones. She made an uneventful recovery from this acute episode. Since that time there has been some tenderness and soreness in the right upper quadrant of the abdomen. She has been intolerant to fatty foods and has had increasing episodes of epigastric distress and pain. The x-ray examination revealed two metallic bodies in the gallbladder. At operation the liver was found to be normal except that there were dense fibroid adhesions anchoring the gallbladder firmly in its bed, apparently where the metal pins had perforated the gallbladder into the liver bed. The patient recovered. She stated that approximately twenty years ago she swallowed a closed safety pin. She has been a dressmaker for the past thirty years and commonly held many pins in her mouth while fitting clothes. Heatley and Bascom discuss whether the pins found in the gallbladder were the shafts of a safety pin, the spring and clasp ends having become oxidized, or whether they were straight pins swallowed on different occasions.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

20:289-416 (March) 1945

Trichomonas Vaginalis Donné: Recent Experimental Advances. R. E. Trussell and G. Johnson.—p. 289.
*Treatment of Schistosomiasis. F. Hernández Morales.—p. 322.
Effect of Chlorine on Motility and Infectivity of Cercariae of Schistosoma Mansoni. J. O. Gonzalez, N. Biaggi and J. Rivera León.—p. 357.
Trichiniasis: Review of Clinical Picture and Laboratory Diagnosis of Disease, with an Analysis of Several Cases. O. H. P. Pepper and R. S. Diaz Rivera.—p. 367.

Treatment of Schistosomiasis.—Hernández Morales says that in recent years physicians in Puerto Rico have become conscious of the frequent occurrence of schistosomiasis. A large number of patients with schistosomiasis were observed at the University Clinic of San Juan, and for the present study 157 of these cases have been selected. Trivalent antimony compounds are the most effective of all drugs in combating schistosomiasis. Antimony and potassium tartrate, antimony and sodium tartrate and fuadin appear to be the drugs of choice; anthiomaline deserves a more extensive trial. It seems that in spite of the fact that fuadin is effective in only 50 to 60 per cent of the cases its low toxicity and the ease with which it can be administered should make it the drug of choice. It is marketed in the form of a clear isotonic solution with 6.3 per cent of the drug; hence 1 cc. represents 8.5 mg. of trivalent antimony. Fuadin is administered intramuscularly with very little discomfort. For an adult the first three injections, of 1.5, 3.5 and 5 cc. respectively, are usually given daily. Subsequent doses of 5 cc. are given every other day or every three days until a total of 45 cc. has been given. Treatment can be repeated after a rest period of one to two weeks. Although this amount of drug may not be adequate for cure in a certain percentage of cases, the author does not favor the excessive amounts recommended by Cawston, who gives total doses of 60 cc., or by Valencia Parparcen, who gives up to from 100 to 150 cc. The high doses are likely to cause severe toxic reactions. The author presents case histories representative of toxic reactions. The more common reactions are nausea, vomiting, epigastric pain, pain in the joints and loss of weight. Of the more severe reactions peripheral neuritis is the most frequently found. A case of herpes zoster and of purpura hemorrhagica were recently observed. In 1 case the administration of fuadin apparently reactivated an old tuberculous process.

Rhode Island Medical Journal, Providence

28:157-232 (March) 1945

Bronchiectasis. U. E. Zambarano.—p. 169.
Technic of Bronchography. B. H. Cotton.—p. 171.
Progress in Surgical Management of Bronchiectasis. R. H. Overholt.—p. 172.
Laborers' Backaches. H. McCusker.—p. 174.

28:233-320 (April) 1945

Discussion of Acute Knee Injuries. G. E. Crane.—p. 245.
Naturopathic Legislation and Education. J. E. Farrell.—p. 248.

Virginia Medical Monthly, Richmond

72:149-188 (April) 1945

Congenital Pyloric Stenosis. F. S. Johns and J. B. Stone.—p. 151.
Dermatitis in American Munitions Industry. J. Q. Gant Jr.—p. 158.
Gas Gangrene: Report of Severe Case with Recovery. H. G. Longaker, C. E. Holderby and M. L. Horne.—p. 164.
Treatment of Congestive Heart Failure. B. R. Powers.—p. 170.

72:189-234 (May) 1945

Psychiatry in Air Forces Station Hospital. D. B. Davis.—p. 192.
Erythroblastosis Fetalis and Rh Factor. P. Hogg.—p. 198.
Vasa Previa. M. P. Rucker and G. R. Tureman.—p. 202.
Observations on Combat Psychiatric Casualties. G. N. Raines.—p. 208.
Medical Problems in Changing World. L. D. Keyser.—p. 211.
Parotid Duct Fistula: Report of Case, with Simple Method of Treatment. C. I. Sease.—p. 217.
Lobar Pneumonia: Another Etiologic Viewpoint. H. Robertson.—p. 218.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

39:1-48 (Jan.) 1945

Basal Tuberculosis. P. Steen.—p. 3.
Mass Radiography in Wales: Experience with Mobile Unit. T. W. Davies and M. Davies.—p. 23.
*Eosinophilic Pneumonitis (Loeffler's Syndrome) with Response to Emetine. T. Randall.—p. 37.

Loeffler's Syndrome with Response to Emetine.—A man aged 20, whose temperature varied between 99 and 100.4 F., presented clinically a condition resembling one of those transitory pulmonary infiltrations with eosinophilia first described in 1936 by Loeffler. Examination revealed increased vocal fremitus and vocal resonance in the upper third of the right lung and crepitations in the right apex and midzone. X-ray examination showed what was presumed to be characteristic tuberculous infiltration of both lung fields. A series of eight sputums were negative for tubercle bacilli, and no amebas nor fungi were found in the sputum or the stools. Daily intramuscular injections of emetine were given for ten days. The patient showed a rapid and dramatic response. His cough and sputum decreased rapidly, his appetite improved and he became symptom free. X-ray examination twenty-five days after the first one showed clear lung fields. Randall calls attention to the rapid resolution of the pulmonary lesions, the relationship this had to emetine treatment and the problem which remains of whether such cases really have an amebic origin when they occur in a district where amebiasis is endemic.

British Medical Journal, London

1:319-356 (March 10) 1945

Incidence of Peptic Ulcer at St. Thomas's Hospital, 1910-1937. H. Tidy.—p. 319.
Blackwater Fever in West Africa. E. W. Skipper and G. L. Haine. —p. 325.
Diagnosis of Malaria in West Africa. D. G. Ferriman.—p. 328.
Removal of Projectile Fragments and Immobilization of Wounds in Forward Areas. J. A. Ross.—p. 330.
Rise in Incidence of Scabies in Closed Community Using Ordinary Soap, and Its Subsequent Fall on Substitution of 5 Per Cent Tetmosol Soap. W. Bartley, K. Usworth and R. M. Gordon.—p. 332.

1:357-398 (March 17) 1945

Shall We Nationalize Medicine? L. Horder.—p. 357.
Pregnancy and Diabetes. Mary A. M. Bigby and F. A. Jones.—p. 360.
Mortality in Childhood During 1920-1938. W. J. Martin.—p. 363.
Hematometra Due to Cicatricial Stenosis of Cervix After Labor. F. S. Tait.—p. 365.
Failure of Immunity Responses in Localized Disease. W. H. Hughes. —p. 366.
New Salmonella Type: Salmonella Cardiff. Joan Taylor, D. G. Edwards and P. R. Edwards.—p. 368.

Journal of Pathology and Bacteriology, Edinburgh

56:485-616 (Oct.) 1944

Lipids of Rat Adrenal in Shock Caused by Experimental Crushing Injury. G. Popják.—p. 485.
Phosphatase Reaction as Aid in Classification of Corynebacteria. J. Bray. —p. 497.
Epithelial Tumors of Urinary Bladder in Mice Induced by 2-Acetylamino-Fluorene. Elizabeth C. Armstrong and Georgiana M. Bonser. —p. 507.
Carriage of Staphylococcus (Pyogenes) Aureus in Man and Its Relation to Wound Infection. A. A. Miles, R. E. O. Williams and B. Clayton-Cooper.—p. 513.
Further Studies on Toxin of Corynebacterium Pyogenes. R. Lovell. —p. 525.
Umbilical Sepsis and Acute Interstitial Hepatitis. J. E. Morison. —p. 531.
Histologic Changes in Liver and Kidneys of Rat After Administration of Thyroid Hormone and Vitamins. V. Korenchevsky and K. Hall. —p. 543.
*Production of Penicillin on Media Made from Vegetable Extracts, Particularly Extracts of Pea. R. P. Cook and W. J. Tulloch.—p. 555.

Production of Penicillin.—Cook and Tulloch report experiments which had the purpose of finding a simple, cheap and easily made medium that might be substituted for the synthetic substrates and Coghill medium and to determine the most favorable conditions for cultivation in such a medium. A strain of Penicillium notatum was grown on a variety of "natural" mediums prepared by extracting various vegetable products and the yield of bacteriostatic substance was assessed. Of the vegetables tested, peas and pea flour gave the highest yields. The authors describe a method of obtaining moderate yields of penicillin by growth at 22 C. in watery extracts of pea. Maximum yield occurs about the eighth to the tenth day, after which the medium becomes alkaline. The product obtained is not "notatin" and is easily extracted with ethyl acetate from the medium acidified with phosphoric acid. When neutralized it is neither pyrogenic nor toxic in the doses tested (50 units for a mouse of 17 Gm. and 3,000 units for a rabbit of 2 Kg.).

Revista de la Policlínica, Caracas

13:319-406 (Sept.-Oct.) 1944. **Partial Index**

Autotransfusion. V. Brito and R. Rojas Guardia.—p. 331.
*Clinical Results Obtained with Oxophenarsine Hydrochloride in Treatment of Malaria. L. Dao L.—p. 339.
Computation of End and Duration of Pregnancy. O. Agüero.—p. 350.
Clinical Aspects and Treatment of Ulcerating Granuloma. L. A. Bello V. —p. 362.

Oxophenarsine Hydrochloride in Malaria.—Dao L. encountered a patient with a genital chancre and a strongly positive Kahn reaction, with fever of the tertian type and schizonts of Plasmodium vivax in the blood. The fever disappeared after the second injection of oxophenarsine hydrochloride (mapharsen) and splenomegaly after the fifth injection. Dao L. administered oxophenarsine hydrochloride to 16 patients with acute malaria, to 12 with relapsing malaria and to 18 with malarial splenomegaly. He obtained favorable results in acute attacks of tertian malaria. Caution is necessary in cases of plasmodium falciparum. In the relapsing cases of malaria the fever usually subsides after the second injection of the drug; also it causes reduction of small recent splenomegalies. In splenomegalic patients with acute febrile attacks the author first employs oxophenarsine hydrochloride alone and after the fever subsides he uses the combination of oxophenarsine hydrochloride and typhoid paratyphoid vaccine. This combination was effective also in a third of the patients with chronic splenomegaly.

Deutsche medizinische Wochenschrift, Leipzig

70:53-82 (Feb. 4) 1944

*Pregnancy Nephrosis. W. Nonnenbruch.—p. 53.
Spontaneous Hypoglycemia. F. Meythaler.—p. 54.
Paracoli Bacteria: Problem of Facultative Pathogenic Properties. P. Weiland.—p. 57.
Typhus in Spain. I. Andreu Urra.—p. 60.
Testing and Evaluation of Rapid Agglutination in Typhus. H. B. Sauter.—p. 63.
Comment on Sauter's Preceding Paper. Bohnenkamp.—p. 64.
Occurrence of Atypical Rudimentary Cases of Malaria During Winter Months. H. Puhlmann.—p. 64.
Front Line Observations on Irritable Bladder. L. Meuwsen.—p. 66.
Wartime Dietetics. E. G. Schenck.—p. 68.
Study of Gastric Juice in Atmosphere Rich in Carbon Dioxide and in Close Air. Lepel.—p. 70.

Pregnancy Nephrosis.—Nonnenbruch reports 5 instances of pure lipoid nephrosis with nephrotic syndrome in women after childbirth. The clinical picture was that of hypoproteinemia, shifting to the left of the albuminous substances of the blood, lipemia, lipoiduria and tendency to edema. Rise of blood pressure and eclampsia preceded in 2 cases and recovery occurred in one of them. One case presented a pure nephrosis in the second month of pregnancy. The nephrosis persisted for two years after the interruption of the pregnancy and recovery took place after an intercurrent fever. The pregnancy kidney is to be considered as nephrosis associated with edema and rise of blood pressure and in many instances with hematuria, but pregnancy kidney is not to be considered as diffuse glomerulonephritis in which condition a transition into a pure nephrotic syndrome was never observed. The edema in the nephrotic syndrome may depend on psychic excitement and that applies to the increase in the edema as well as its disappearance. Renal changes on the one hand and rise of blood pressure and edema on the other may have the same origin in diffuse glomerulonephritis and may be considered as coordinated manifestations of this condition. A common cause for the renal and extrarenal processes may have to be considered likewise in pregnancy kidney. Rise of blood pressure and edema may be the extrarenal results of this condition, as well as those of

glomerulonephritis, but glomerulonephrosis with heavy loss of albumin and without any inflammatory reaction of the kidney may develop in the absence of "nephritis." There may be various transitional stages to pure lipoid nephrosis with the nephrotic syndrome. Pregnancy nephropathy requires cooperation of the gynecologist with the internist.

70:263-292 (May 12) 1944

Principle of Localization and Analysis of Function in Vegetative System. C. Oehme.—p. 263.
*Experimental Study on Origin of Pylorospasm. G. Bonell.—p. 267.
Galactagogues? Lili Walter.—p. 269.
Functional Disturbances of Micturition in Wartime. J. Deussen.—p. 272.
Do Relapses of Typhus Occur? H. Raettig.—p. 274.
Use of Radioactive Indicator Methods in Biology and Medicine. J. Gerlach.—p. 275.
Effect of Estrogen and of Testosterone Propionate on Lacteal and Genital Crisis in Newborn. H. Slobozianu.—p. 276.
Thoracic Displacement of Stomach Caused by Diaphragmatic Hernia. F. Umber.—p. 278.

Origin of Pylorospasm.—Bonell studied the excretion of protective ferments in the urine of 19 normal male and female infants with mild disorders of nutrition of ages between 20 days and 13 months. Placenta, ovary, corpus luteum and testis were used as substrates for Abderhalden's reaction. The elaboration of specific protective ferments was studied in a second series of 10 male infants with pylorospasm between the ages of 3 and 7 weeks. The secretion of specific protective proteinases which split placenta proteins but frequently cause the disintegration of substrates from the ovary, corpus luteum and testis was demonstrated in the urine of all the infants up to 3 months of age and in 2 infants 4 months old. The excretion of these ferments, which were specific for the hormone substrates of the mother, could not be demonstrated in the urine of infants with pylorospasm. Their organism does not seem capable of producing protective ferments causing the breakdown of proteins which had been taken over by the infant from the mother and which were foreign to the blood or at least to the plasma of the infant. This is regarded as experimental proof of Stolte's concept of the origin of pylorospasm. The clinical picture of vomiting may therefore be included among the pregnancy reactions of the newborn. No other theory furnishes better explanation for the limitation of pylorospasm to a definite age and its predilection for one sex. The endocrine origin of pylorospasm is likewise suggested by clinical and roentgenologic observations which prove that pylorospasm requires a certain length of time for its full development. Further proof is to be seen in the high incidence of spontaneous recoveries after the third month, a period which coincides in the infant with the time at which the effect of the hormone of the mother gradually disappears.

Wiener klinische Wochenschrift, Vienna

57:157-182 (April 7) 1944. **Partial Index**

Surgery of Thyroid. B. Breitner.—p. 157.
Experiences of Ophthalmologist During Air Assaults on Civil Population. J. Bohnen.—p. 159.
Endocrine and Vegetative Component in Allergic Diseases and in Diabetes Mellitus. F. Gerl.—p. 161.
*Therapy of Acute Leukemia and of Agranulocytosis. O. Scharff.—p. 169.

Therapy of Acute Leukemia.—Scharff reports good results with sulfathiazole therapy in 3 cases of severe necrosis of the oral mucosa and septic agranulocytosis in the presence of chronic lymphadenitis in 1, with acute myelosis in another and with agranulocytosis in the third. The first patient, a man aged 44, was given 6 Gm. of sulfathiazole the first day and 4 Gm. for the two following days. The acute septic leukemia with its immediate threat to the patient's life gave place to chronic lymphadenosis complicated by this septic condition. Death occurred from the primary chronic disease four months later. Recovery from acute myelosis developing in the second case from chronic myelosis and combined with a large tumor of the spleen was obtained with 8 Gm. of sulfathiazole on the first and second days and of 4 Gm. on the third day. The early stage of chronic myelosis was restored and the patient, a man aged 37, was dismissed free from complaints. The third patient, a man aged 33 with septic agranulocytosis, was cured by two courses of sulfathiazole treatment. The first consisted of 8 Gm. of sulfathiazole for three days and of 4 Gm. for one more day. The recurrence of the acute septic condition required a second course. The rapid disappearance of the severe necrosis of the oral mucosa in all 3 cases and of the prepuce and the tympanic membrane in the second case was striking. The cure of the septic condition is to be considered as the result of the sulfathiazole treatment, since acute leukemia or septic agranulocytosis does not subside spontaneously. The same good results obtained in these 3 different cases suggest a relationship between the three pathologic conditions.

Acta Dermato-Venereologica, Stockholm

25:1-110 (June) 1944. **Partial Index**

*Treatment of Syphilis with Specific Drugs and Simultaneous Fever Therapy, Appraised by the Effect on Treponema Pallidum in Fresh Eruptions. H. Haxthausen.—p. 1.
Cultivation of Gonococci as Diagnostic Method in Gonorrhea in Women. F. Reymann.—p. 9.
Dermatologic Investigations on Pairs of Identical Twins. R. Melsom. —p. 29.
Comparative Studies on the Effect of Various Antimycotics on Dermatophytosis Pedis, Ascertained by Systematic Examination for Fungi. Mildrid Andersen and Marie Plesner.—p. 48.
Indications for the Treatment of Gonorrhea with Sulfathiazole and Fever Shock, Elucidated by Chemoresistance and Gonococcus Complement Fixation Reaction. P. V. Marcussen.—p. 77.

Simultaneous Treatment of Syphilis with Specific Drugs and Fever.—Haxthausen administered to 21 patients with primary syphilitic lesions 0.3 Gm. of neoarsphenamine, and to 20 patients 0.3 Gm. of neoarsphenamine and fever produced by simultaneous intravenous injections of a Bacillus aerogenes faecalis vaccine in doses of 80 to 100 million bacilli. In the first group of patients the spirochetes disappeared in 4 of the 21 patients within twenty-four hours, whereas the same result was obtained in 17 of the 20 patients in the second group. Fever vaccine therapy alone did not have much effect on the number and the motility of the spirochetes three days after the fever. The effect of bismuth on the presence of spirochetes in syphilitic papules demonstrated a similar accentuation of the bismuth effect by fever therapy. This suggested that intensification of the effect of the specific drugs may result from combining fever with specific drugs. It is advisable to employ fever therapy simultaneously with the specific drugs in old refractory cases, and particularly in cases in which the usual treatment is ineffective from the onset or in which treatment is soon followed by a relapse. One should employ doses of 0.6 Gm. for women and 0.75 Gm. for men. No untoward reactions were observed from these doses and fever therapy, whereas in 1 refractory case in which neoarsphenamine was given in 0.9 Gm. doses the second combined injection was followed by the occurrence of hepatitis.

Acta Medica Scandinavica, Stockholm

116:409-606 (March 10) 1944. **Partial Index**

Experiments on Allergic Bronchial Asthma. P. Kallós and L. Kallós-Deffner.—p. 409.
*Epinephrine Preparation with Delayed Action in Treatment of Experimental Asthma. P. Kallós and L. Kallós-Deffner.—p. 441.
Comparative Results in Cases of Hepatitis Treated With or Without Insulin-Dextrose. O. Lenz.—p. 447.
Diseases of Heart and Blood Vessels Due to Congenital Syphilis: Case Report. I. Aggerback.—p. 454.
Hallberg's Peculiar Corpuscles in Tuberculous Material. K. H. Clausen. —p. 468.
Anaphylactic In Vitro Reaction to Tuberculin. A. Grönwall.—p. 470.
Cardiovascular Observations in Myasthenia Gravis and Dystrophia Myotonica. E. Ask-Upmark.—p. 502.
Atropine Treatment of Sequel of Epidemic Encephalitis. I. Vartiainen. —p. 536.
Determination of Erythrocyte Content of Circulating Blood by Labeling with Radium Phosphorus. G. Hevesy, K. H. Köster, G. Sørensen, E. Warburg and K. Zerahn.—p. 561.

Epinephrine Preparation with Retarded Action.—Kallós and Kallós-Deffner used a slow acting epinephrine preparation (adrenaline retard) in experimentally induced asthma in guinea pigs. The preparation is effective in the prophylaxis of asthma. Experimentally produced attacks of asthma which without treatment would probably have a fatal outcome can be arrested by the intramuscular injection of the slow acting epinephrine preparation. The effect seems to persist for several hours. The preparation is well tolerated and has no damaging effect on the tissues.

Book Notices

The Precentral Motor Cortex. Edited by Paul C. Bucy. Illinois Monographs in the Medical Sciences, Vol. IV, Nos. 1-4. Paper. Price, $4.50. Pp. 605, with 140 illustrations. Published Under the Auspices of the Graduate School. Urbana: University of Illinois Press, 1944.

This is a timely monograph designed to bring to date the rapidly accumulating knowledge of the motor cortex. The editor, Dr. Paul C. Bucy, has selected his contributors wisely and chosen the subject material critically. The result is a volume of splendid contributions concerning all aspects of the problem of the motor cortex. It is quite fitting that this volume should be contributed by American authors, for it is in this country that much of the recent investigation of the motor cortex has unfolded, though the impetus for such investigation may have come from Dr. Otfrid Foerster, to whom the volume is dedicated.

The scope of the work is seen in the contents: (1) architecture of the precentral motor cortex, G. von Bonin; (2) role of architectonics in deciphering the electrical activity of the cortex, James L. O'Leary; (3) afferent connections, A. Earl Walker; (4) efferent fibers, Paul M. Levin; (5) pyramidal tract, Sara S. Tower; (6) excitatory and inhibitory processes within the motor centers of the brain, N. Bubnoff and R. Heidenhain; (7) corticocortical connections, W. S. McCulloch; (8) somatic functions, Margaret A. Kennard; (9) relationship to the cerebellum, Percival Bailey; (10) autonomic functions, Margaret A. Kennard; (11) frontal eye fields, Wilbur K. Smith; (12) electrical excitability in man, Theodore C. Erickson; (13) effects of extirpation in man, Paul C. Bucy; (14) relationship to abnormal involuntary movements, Paul C. Bucy; (15) clinical symptomatology, Charles D. Aring; (16) pathology, Charles Davison; (17) significance of the precentral motor cortex, Marion Hines.

Some conception of the strides which have been made in the understanding of our knowledge of the precentral cortex in recent years may be recognized by the disclosure of the significance of the strip area, by the working out of cortical and subcortical connections, by the elucidation of the meaning of flaccidity and spasticity, in which much still remains to be done, by the determination of the origin of the pyramidal tract, by the mapping out of extrapyramidal or parapyramidal cortical areas and connections and by the results of extirpation in man. These are but a few of the problems to which new data have been contributed, and it is safe to assert that much new material remains to be disclosed.

The editor and the authors are to be congratulated not only on a fine volume but on the part which American neurology, neurosurgery and neurophysiology have played in the amplification of our knowledge of the motor cortex.

A complete bibliography adds to the value of the volume. It is recommended without reservation to all those interested in neurology, whether their field is clinical or laboratory.

Emotional Problems of Living: Avoiding the Neurotic Pattern. By O. Spurgeon English, M.D., Professor of Psychiatry, and Gerald H. J. Pearson, M.D., Associate Professor of Child Psychiatry, Temple University Medical School, Philadelphia. Cloth. Price, $5. Pp. 438. New York: W. W. Norton & Company, Inc., 1945.

The first half of this book is devoted to a thoroughgoing discussion of the emotional disturbances that arise in infancy and childhood. Growth is conceived as a series of periods classified as oral, anal, phallic and latent, proceeding then to puberty and adolescence, work and marriage. Psychologic disturbances later in life seem to result largely from the frustrations of pleasure that result in hostility, pain and hatred. Nail biting is considered a sign of poor emotional adjustment. The severe cases are part of the desire of the child to annoy and humiliate the parents. Most of the points made are illustrated by case reports. The volume is planned not only for the medical reader but also for medical students, teachers, nurses and social workers. The book is definitely orientated to psychoanalytic thinking. Many statements are made as conclusive which might still be considered in the realm of investigation. However, a careful reading of the work will aid greatly the understanding of the relation of mind to body and thus advance greatly the quality of medical practice.

The Chemistry and Technology of Food and Food Products. Prepared by a Group of Specialists under the Editorship of Morris B. Jacobs, Ph.D., Senior Chemist, Department of Health, City of New York. Volume II. Cloth. Price, $10.50; $19 per set of two volumes. Pp. 890, with 166 illustrations. New York: Interscience Publishers, Inc., 1944.

This volume contains the four concluding sections of this treatise on food and food processing and is concerned entirely with the technology of processing. Such matters as conveying of foods in various forms and their storage are considered. Discussion is given to the principles of methods used in preparing food for storage. In later sections the more detailed technical procedures and problems of preservation are taken up. Standards of quality which must be met to pass federal, state and municipal requirements are outlined and references given to detailed description of federal standards adopted up to February 1943. Much information is given on the measures used to maintain sanitary control. The important and informative last section describes the production of all substantial types of processed and natural foods, with inclusion of many pictures. Facts and figures on the methods of preparation of alcoholic beverages and their chemical composition are found here. The treatment of water for various industrial uses as well as for drinking purposes is covered. This volume serves the valuable purpose of giving a broad survey of the field of food processing. The reader is oriented in each subject but would need to look further for detailed information. As an overall perspectus of the food industry the book would be hard to equal.

Science in Progress. By Walter R. Miles, and others. Edited by George A. Baitsell. Foreword by Lorande Loss Woodruff. Fourth series. The Society of the Sigma Xi, National Lectureships 1943 and 1944. Cloth. Price, $3. Pp. 331, with 106 illustrations. New Haven, Conn.: Yale University Press; London: Oxford University Press, 1945.

This volume is the fourth of a series which makes available Sigma Xi lectures dealing with fields in which there has been great progress. The scientist will find these lectures uniformly of high quality. The authors are the men who themselves have been in the forefront of research. The book is excellently printed, with numerous black and white and colored illustrations. The subjects especially involved in the present volume which would be of interest to physicians include psychologic aspects of military aviation, by Walter R. Miles; the physical structure and biologic action of nerve cells, by Detlev W. Bronk; energy and vision, by Selig Hecht; chemical transmission of nerve impulses, by Otto Loewi; present status of the vitamin B complex, by C. A. Elvehjem, and blood and blood derivatives, by Edwin J. Cohn.

The Svedberg 1884 30 1944. [Anniversary Volume.] Boards. Pp. 731, with illustrations. Uppsala, Sweden: Almqvist & Wiksells Boktryckeri A.B., 1944.

This volume is a tribute by grateful associates, assistants and pupils to The Svedberg, professor of physical chemistry at the University of Uppsala, on his sixtieth birthday. Because of the war the contributions are practically all of Swedish origin. The English, German, Swedish and French languages are used in the order of frequency as mentioned. There are fifty-five papers by some seventy-five authors, dealing mainly with investigations in chemistry and its borderlands, particularly technology, but including also biology and medicine. The papers constitute an impressive record of Swedish chemical research during recent years and especially in the Institute of Physical Chemistry in Uppsala, where Svedberg has carried on his work since 1931. The publication of this handsome, well edited memorial volume was made possible by grants from Swedish industrial concerns.

Yeoman's Hospital. By Helen Ashton. Cloth. Price, $2.50. Pp. 271. New York: Viking Press, 1945.

The author studied medicine between 1920 and 1926 after serving as a nurse in the first world war. Most of her novels have a medical background. This novel tells the story of a nonprofit voluntary hospital in England, of a few days in the life of the institution when a new class of nurses begins, when the board of the hospital is concerned with its future, when the members of the resident staff are competing for an appointment in surgery. A young woman doctor who is a surgeon and a somewhat morose pathologist with a duodenal ulcer are the heroine and the hero of the book. A somewhat careless young surgeon who misses a diagnosis of brain abscess helps to make

the medical aspects interesting. Miss Ashton writes professionally and is exceedingly skilful in organizing her story. It serves, as does many another British novel, to picture certain aspects of medical practice more accurately than they appear in the writings of the economists and the politicians. She reveals the real concern of the medical profession over the disappearance of the voluntary hospital. She reveals the true opinion of the medical profession of the quality of panel practice, and she reveals also the scale of living of the British worker as it is seldom revealed in the writings of those who speak so learnedly about the Beveridge plan. The novel is well worth the time of any physician who likes to read fiction with a medical aspect.

Nursing: A Profession for College Women. Paper. Price, 25 cents. Pp. 35. Published by the Nursing Information Bureau of the American Nurses' Association co-operating with the National League of Nursing Education and the National Organization for Public Health Nursing. New York, 1945.

This handbook, prepared by leading organizations in the field of nursing education and service, contains a wealth of information for young women who are interested in professional nursing and wish to contribute to the care and welfare of the sick. It describes educational requirements, types of nursing schools, cost of preparation, available financial aid, placement opportunities, positions in military and civilian service, working conditions, salary ranges, opportunities for professional and personal development and many other significant factors. Selected references are included as well as other sources from which specific information can be obtained. While this pamphlet may find its greatest use among counselors in colleges and high schools, it will be equally valuable as a direct aid to individual students interested in nursing education. Since there is still an urgent demand for additional nursing personnel in relation to military and civilian needs, it is hoped that the information contained in this handbook will be given wide distribution throughout the country.

Annual Review of Physiology. James Murray Luck, Editor. Victor E. Hall, Associate Editor. Volume VII. Cloth. Price, $5. Pp. 774. Published by the American Physiological Society and Annual Reviews, Inc. Stanford University P. O., California: Annual Reviews, Inc., 1945.

This book contains important and fundamental contributions to physiology. In spite of the war it is the largest volume of the series yet published. It contains a wealth of valuable information, including chapters on the peripheral circulation, respiration, digestive system, blood, heart, special senses, exercise and other important subjects by thoroughly qualified investigators. As in previous years, this is an invaluable book of source material for investigators working in physiology or in the borderland between clinical medicine and physiology.

An Introduction to Animal Biology. By John B. Parker, Ph.D., and John J. Clarke, Ph.D. Second edition. Cloth. Price, $3.75. Pp. 532, with 172 illustrations. St. Louis: C. V. Mosby Company, 1945.

The second edition follows the general plan of the first edition, but the material has been brought up to date and expanded. The book is intended for a one semester college course. The authors have developed the material in such a way that the student sees the subject as a whole, rather than losing himself in a maze of details. Animal forms which are of economic or medical importance are emphasized. The subjects of heredity, genetics and evolution, as well as hormones and vitamins, are treated in separate chapters. An appendix groups the material together in tabular form, and the glossary covers fourteen pages.

Social Work Year Book 1945: A Description of Organized Activities in Social Work and in Related Fields. Russell H. Kurtz, editor. Eighth issue. Cloth. Price, $3.25. Pp. 620. New York: Russell Sage Foundation, 1945.

This is the eighth of the series which has made a place for itself as one of the most reliable reference works for those in the field of public health, medicine and social work generally. The book is a dependable guide to the agencies in the field and the advances that have been made in specific areas of social work. Of special interest in the current number are sections devoted to the veterans, social insurance, foreign relief and rehabilitation, and interracial and intercultural activities. Excellent bibliographies accompany each of the discussions.

Science Today and Tomorrow. By Waldemar Kaempffert. Second Series. Cloth. Price, $2.75. Pp. 279. New York: Viking Press; Toronto: Macmillan Company of Canada, Ltd., 1945.

Mr. Waldemar Kaempffert has collected here the essays which he has contributed at various times to various publications. Of special interest to physicians in this volume is a chapter called "Sick Medicine Needs a Doctor." It is replete with the misrepresentations which are expected when Mr. Kaempffert writes about medicine, of which he knows little and concerning which he seems unwilling to learn more. He charges, for instance, that physicians must practice by the fiat of their national organization. Actually the national organization adopts principles of ethics which members follow because they believe in them. For one who presumes to be educated in the scientific method Mr. Kaempffert writes with innumerable and extraordinary prejudices. Indeed, his choice of words is designed particularly to create prejudice. Mr. Kaempffert does not believe that doctors charge according to the patient's ability to pay. He thinks they charge all the traffic will bear. He charges that voluntary insurance does nothing for preventive medicine but disregards the fact that there is little or no preventive medicine in any compulsory sickness insurance plan. If the rest of Mr. Kaempffert's book is as bad as this chapter, investment will represent a considerable waste of money. Fortunately, however, the reader has free choice—he can take it or leave it. It is our recommendation that he leave it.

Vitamins and Hormones: Advances in Research and Applications. Edited by Robert S. Harris, Associate Professor of Nutritional Biochemistry, Massachusetts Institute of Technology, Cambridge, and Kenneth V. Thimann, Associate Professor of Plant Physiology, Harvard University, Cambridge. Volume II. Cloth. Price, $6.80. Pp. 514, with illustrations. New York: Academic Press, Inc., 1944.

This volume contains material on aspects of vitamins and hormones not dwelt on in volume I. The subjects considered include the role of vitamins in the anabolism of fats; the chemistry of biotin; the nutritional requirements of primates other than man; physiologic action of vitamin E and its homologues; the chemistry and physiology of vitamin A; para-aminobenzoic acid—experimental and clinical studies; critique of etiology of dental caries; vitamin and cancer; effect of androgens and estrogens on birds; hormones and cancer; x-ray crystallography, and sterol structure. There appears to be little rhyme or reason to the selection of topics. These volumes cannot serve as a reference source on the title subjects of vitamins and hormones because of the scattered coverage given thus far. The editors may feel that information is assembled here which is not found in other textbooks. This is actually true and is probably the objective of the work. This publication can be recommended as a particularly good and complete source of factual information on the subjects presented. Each contributor is a recognized expert who surveys the field with facts from the literature and but little discussion. Extensive reference lists increase the value of the books to the reader.

Clinical Roentgenology of the Digestive Tract. By Maurice Feldman, M.D., Assistant Professor of Gastroenterology, University of Maryland, Baltimore. Second edition. Cloth. Price, $7. Pp. 769, with 551 illustrations. Baltimore: Williams & Wilkins Company, 1945.

The second edition of this complete study of the gastrointestinal tract from the roentgenologic point of view has been thoroughly revised and newly illustrated. Every condition of the entire gastrointestinal tract has been covered; the more commonly seen pathologic entities have been thoroughly studied and the rarer conditions described in brief. A complete bibliography at the close of each chapter allows the reader to follow up whatever subject he may be particularly interested in. No pathologic condition in any way associated with any part of the gastrointestinal tract has been omitted. The subject matter is handled clearly and concisely, and all of the more recently described developments in x-ray examination have been added. Numerous x-ray reproductions and artist's drawings illustrate each condition. In this way the volume can be considered as an atlas for study by the medical student. It is designed not only for the roentgenologist but also for the gastroenterologist —the general practitioner and the medical student. The need for such a volume is evidenced by the difficulty usually encountered in seeking information on the many aspects of this large subject.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RINGWORM OF THE SCALP

***To the Editor:*—What is the latest and most successful treatment for tinea capitis?**

M.D., Pennsylvania.

ANSWER.—In the present rather widespread epidemic of tinea capitis the offending organism in most cases is Microsporum audouini. Infections caused by this organism are extremely resistant to treatment. The average case may last for eight or nine months. The most rapid and successful method of treatment is epilation of the diseased hair by means of the x-rays. This, however, is a most delicate operation and should be done only by some person experienced in this type of treatment. The machine should be accurately standardized and the quantity of x-rays necessary to produce a temporary alopecia definitely known; for further details of this treatment one should consult George M. MacKee's X-Ray and Radium Treatment of Diseases of the Skin (ed. 3, Philadelphia, Lea & Febiger, 1938, chapter 28).

Treatment with topical applications is slow, but if the hair is clipped short an ointment containing 10 per cent iodine crystals in aquaphor can be used twice daily. This should be applied with a soft toothbrush morning and night, and as soon as a reaction occurs and the scalp becomes tender, treatment should be suspended for a few days and then resumed.

Another ointment of value is composed of precipitated sulfur 6 Gm., salicylic acid 3 Gm., castor oil 6 cc. and petrolatum to make 60 Gm. Still another is ammoniated mercury 3 Gm., salicylic acid 2 Gm., petrolatum 30 Gm. and hydrous wool fat to make 60 Gm.

COMPLICATIONS AFTER CISTERNAL INJECTION OF RADIOPAQUE OIL

***To the Editor:*—One year ago a patient aged 35 had lipiodol 2.5 cc. injected cisternally to prove a diagnosis of a ruptured cervical disk. Following the injection the patient had a severe headache and a temperature of 102 F. for twenty-four hours. This was followed by severe pains in both hips and in the lower part of the back which necessitated sleeping in Fowler's position for ten days. For the next week the pains in both hips were less severe but were accentuated by walking or standing and were accompanied by pain in the sacrum on coughing, sneezing or laughing heartily. At the end of three weeks these pains had disappeared except for slight pains in both hips. About a month later the pain came back in both hips more severely than ever, particularly in the right hip. The pain was alleviated by bed rest and was accentuated by walking or standing. These attacks of pain in the right hip and back continued off and on for the next six months. At this time an attempt was made to remove the lipiodol, and half of it was removed. Following the removal of part of the lipiodol the pain subsided but two months later returned in the right hip, not as severe as originally but more chronic and persistent. An x-ray film of the lumbosacral area taken one year after the injection of the lipiodol showed lipiodol to be scattered on most of the nerve roots from the first thoracic down to the end of the spinal cord, with the bulk of the lipiodol in the sacral sac and immovable. The x-ray film showed also considerable calcification of the pelvic arteries. Is lipiodol in the subarachnoid space productive of irritation of the nerve root? If so, how long does such irritation last, and what is the prognosis? What references in the literature are there on the effects of lipiodol used in the spinal canal?**

Harry L. Strachan, Captain, M. C., A. U. S.

ANSWER.—Current opinion, based on extensive experience, is that radiopaque iodized oil is of little value in the diagnosis of most ruptured intervertebral disks with compression of one of the cervical roots; in the future lipiodol or similar substances will probably be used only in those cases in which a herniation of an intervertebral disk has been confused with a spinal cord tumor.

The acute symptoms of headache, fever and irritation of the lumbosacral nerve roots which occurred in this case, though considerably more severe and persistent than are usually seen, are not rare following the intraspinal injection of radiopaque oils. In the vast majority of such cases these symptoms subside within twenty-four hours and in the remaining few within the next three days. Only rarely does irritation of the spinal roots and of the meninges persist beyond that. The most persistent irritation resulting from iodized oil is usually seen in cases in which the original symptoms arose from inflammatory disease of the meninges and spinal nerve roots. In order to avoid such irritation it is now common practice to remove the oil immediately after fluoroscopy whenever that is possible. Either lipiodol or pantopaque can be removed by aspiration through a large (18 gage) lumbar puncture needle by having the patient on his abdomen on the tilting fluoroscopic table and puddling the oil about the end of the needle.

Cases in which irritation of the spinal roots, definitely established as due to iodized oil, has persisted for longer than a few weeks are so rare that few if any have been studied. It is thus impossible to state whether, in the case cited, the symptoms result from lipiodol, as seems possible, or are secondary to the disease process for which the myelographic examination was originally made. It is likewise impossible to guess, with anything like worthwhile accuracy, how long such symptoms might persist or what the ultimate outcome may be.

References:

Marcovich, A. W.; Walker, A. E., and Jessico, C. M.: The Immediate and Late Effects of the Intrathecal Injection of Iodized Oil, THE JOURNAL, May 17, 1941, p. 2247.

Garland, P. H., and Morrissey, E. J.: Intracranial Collections of Iodized Oil Following Lumbar Myelography, *Surg., Gynec. & Obst.* **70**: 196 (Feb.) 1940.

Brown, H. A., and Carr, J. L.: The Effect of Lipiodol in the Subarachnoid Space, *ibid.* **68**: 945 (May) 1939.

Bucy, P. C., and Spiegel, I. J.: An Unusual Complication of the Intraspinal Use of Iodized Oil, THE JOURNAL, June 5, 1943, p. 367.

PAIN CAUSED BY MORPHINE AND CODEINE

***To the Editor:*—Following removal of the gallbladder, morphine and codeine have caused severe pain in the region of the common duct. Is Demerol effective in such a condition?**

H. B. Aitkens, M.D., Le Center, Minn.

ANSWER.—Both morphine and codeine have been found to increase the tonus and motility of the common bile duct and of the sphincter of Oddi. Opium and derivatives of opium also increase the tonus and motility of the small intestine and colon and may produce violent spasms of localized areas of the intestine. Severe abdominal pain produced by morphine and codeine after removal of the gallbladder could be due to specific contraction of segments of the colon, small intestine or possibly also of the sphincter of Oddi. Isonipecaine ("Demerol") has been found to be effective as a substitute for morphine in relieving many types of pain and, in addition, seems to exert a definite spasmolytic effect.

References:

Yonkman, F. F.; Noth, P. H., and Hecht, H. H.: Demerol, *Ann. Int. Med.* **21**: 7 (July) 1944.

Noth, P. H.; Hecht, H. H., and Yonkman, F. F.: Demerol, *ibid.* **21**: 17 (July) 1944.

ELECTRIC SHOCK TREATMENT FOR MENOPAUSAL SYMPTOMS

***To the Editor:*—A letter now being distributed stresses electric sleep therapy for nervous or mental disturbances occurring during the menopause. I am not aware that this treatment is a recognized one for this type of trouble. Please advise me as to its value and use.**

Elvin L. Clark, M.D., Shelbyville, Ill.

ANSWER.—The letter in question was from the State of Illinois Division for Cooperative Extension Work in Agriculture and Home Economics in Shelbyville. It was a condensed reprint of an article by Dr. Foster Kennedy, published in the *Woman's Home Companion* for November 1944. In this article appears the following statement relative to treatment for the symptoms of the menopause: "The most remarkable of these new weapons is electric sleep therapy—a treatment as painless and simple as it is safe and successful. Between 80 and 150 volts of electric current are passed through the brain for one tenth of a second, and that is all there is to it." This treatment is electric shock treatment. Because of the possibility of harm, it should never be carried out except by responsible physicians. In the original article the statement is made that patients may receive such treatment in the morning and attend a matinée the same afternoon. Since lapses of memory sometimes occur following treatment, however, this advice is questionable. Moreover, there are other methods of treatment in the menopause besides shock therapy, and it would seem to be desirable, at least in the present stage of experimentation, to limit this form of treatment to patients under good control in hospitals. Bennett and Wilbur (*Am. J. M. Sc.* **208**:170 [Aug.] 1944) report a series of 75 cases of involutional melancholia or similar symptoms in the menopause, in 90 per cent of which good results were obtained with a combination of shock therapy and psychotherapy. All of these patients, it is said, were treated with estrogens without good results; 64 of the 75 had shock therapy. Many had to be given psychotherapy in addition. Ninety per cent were helped or apparently cured in the course of from four to six weeks.

NUMBNESS OF FINGERS IN METAL WORKERS

To the Editor:—A number of the employees of an aircraft plant complain of "numb" fingers. The only metal used is aluminum. The numbness has sudden onset and usually does not follow any anatomic distribution but involves half a finger, part of a finger or several fingers. There are no associated complaints.

Frank Meola, M.D., Akron, Ohio.

ANSWER.—Aluminum is a nontoxic metal and, as such, is not the cause of the condition described. However, "numb fingers" may arise from the handling of any sheet metal or other sizable object with comparatively thin edges. The numbness results from pressure on nerve endings or nerve filaments. An analogous state may appear if a pail of water is carried by a thin wire bale. Another condition among sheet metal workers and in other occupations is termed "dead fingers" or "white fingers." This occurs only during cold weather and after exposure to cold along with the use of vibrating tools either pneumatic or electric. This condition, which is partially or totally an angiospasm, may be limited to one hand and characteristically to certain fingers, depending on the type of tool and the method of its application to work. For greater detail as to pathology, treatment and prevention, reference is made to the International Labor Office "Encyclopedia of Occupations and Health," under "Pneumatic Tools." In addition to a lengthy original publication, further discussion may be found in the supplement to this encyclopedia.

PRESBYOPIA OR CHEMICAL INJURY OF EYES

To the Editor:—A compensation case involves a man who was working with a chemical called phenathiazene and who developed contact dermatitis of the hands and also around the eyes. This condition cleared up under treatment without any complications, but the man is now claiming that his glasses, which previously were used for reading only, are no longer satisfactory; he believes that exposure to this chemical has had some cetrimegtal effect on his near vision. There was no involvement whatever of the cornea or conjunctiva, and I feel that the change in his vision is due to presbyopia, which has become more pronounced now at his age of 49, thereby necessitating that he wear glasses constantly. Could there be any connection between the exposure to this phenathiazene and his apparent sudden loss of accommodation?

M.D., Minnesota.

ANSWER.—The cornea and conjunctiva having escaped involvement in the contact dermatitis process, it is obviously necessary to search elsewhere for the causative factor in this patient's loss of accommodation. The most frequent and the most likely factor is the patient's age. From 45 to 50 years of age there is such a rapid development of presbyopia that the useful life of a pair of spectacles seldom extends beyond eighteen to twenty-four months.

POSTOPERATIVE IRRADIATION AND STERILIZATION FOR MAMMARY CANCER

To the Editor:—An unmarried woman aged 31 discovered a lump in her breast which on removal a few days later was pronounced malignant by two very reliable pathologists. A radical mastectomy was performed a week later. The glands were not found to be involved. A radiologist suggests that she receive x-rays to the chest and also that she be sterilized by x-rays or radium. Is this advisable?

Mark S. Shaine, M.D., New York.

ANSWER.—The question of postoperative irradiation for mammary cancer is not settled. Most radiologists advocate this procedure routinely, whereas some consider that it should be used only on special indications [see editorial "The Dilemma of Prophylactic Postoperative Irradiation in Mammary Cancer," *Radiology* **30**:769 (June) 1938]. The question of ovarian sterilization as a prophylactic measure against recurrence and metastasis is also controversial. Many students of the subject would consider the evidence inadequate to perform sterilization of the patient under consideration and would advise against the procedure in a patient 31 years of age without clinical evidence of recurrence or metastasis.

MANIFEST SILICOSIS AND DURATION OF EXPOSURE

To the Editor:—I have a patient who the radiologist says has pneumonoconiosis. There is a question of compensation insurance. How long does silicosis take to develop? The patient has been exposed to sand blast, steel dust and spray paint. What is the minimum time in which silicosis and siderosis can develop?

William Heard, M.D., Pentwater, Mich.

ANSWER.—Sandblasters working continuously in enclosed spaces without adequate ventilation sometimes develop silicosis in about two years. If the exposure has been unusually severe the x-ray examination may not reveal the characteristic nodular pattern, but there may be a diffuse obliterative shadow like that of pneumonia. Siderosis from the steel dust might be manifested as a simple exaggeration of the normal branching shadows of the blood vessels. As the picture of spray paint may also be diffuse, with or without fine nodulation, it would be hard to evaluate the effects of the combined exposures without more detailed information as to the lengths of exposure to the various irritants mentioned. As a general rule one expects heavy exposures to dust in excess of two years to produce demonstrable effects on the lungs.

CASTRATION FOR CARCINOMA OF MALE BREAST

To the Editor:—Two years ago a man aged 36 had a lump in the right breast. A frozen section showed a typical adenocarcinoma, and a radical breast amputation was performed at the time. He made an excellent recovery. The sections showed some metastases in the axillary glands. A course of 2,000 roentgens of radiation was given following the operation. The patient has remained clear of any evidence of local recurrence or distant metastasis until recently. He now has x-ray evidence of metastatic bone destruction in a rib, a vertebral body and in the ilium, with pain associated with the involved areas. Further radiation therapy can be given, but the possibility of hormone treatment comes to mind. There is a fair amount in the literature concerning the use of female sex hormone for carcinoma of the prostate, of ovariectomy for carcinoma of the female breast, and of male sex hormone for carcinoma of the female breast. I am not able to find any comparable information on treatment of carcinoma of the breast in the male. The following possibilities are suggested: the use of the female sex hormone (theelin, stilbestrol, and so forth); the use of the male sex hormone; castration. Which, if any, could be recommended in this particular case (this patient is a perfectly normal virile male)? If a hormone is considered most suitable, please recommend size of dose, method of administration and frequency. Would the advice given be on theoretical grounds or based on concrete experience with a comparable case? Any other suggestions available would be appreciated.

M.D., California.

ANSWER.—Castration has been performed for carcinoma of the male breast, and in some instances this procedure has caused regression and repair of metastatic lesions in bone and lungs. Cessation of pain is sometimes dramatic. The clinical results are somewhat similar to those noted following castration for carcinoma of the prostate.

Reference:

Treves, Norman, and others: The Effects of Orchiectomy on Primary and Metastatic Carcinoma of the Breast, *Surg., Gynec. & Obst.* **78**: 589 (Dec.) 1944.

CILIARY ACTIVITY IN NASAL SINUSES

To the Editor:—I am desirous of ascertaining the ciliary activity within the antrum. Where can I find a detailed description of an acceptable method, previously employed, for the determination of this information? What type of carbon particles have been employed?

W. W. Wilkerson Jr., M.D., Nashville, Tenn.

ANSWER.—Arthur W. Proetz has written a textbook which discusses the question raised in considerable detail (Essays on the Applied Physiology of the Nose, Annals Publishing Company, St. Louis, 1941). He furnishes in addition numerous references to other work done in this field.

INFANT FEEDING

To the Editor:—Can an infant between the ages of 2 and 6 months gain weight and develop normally on a formula of equal parts of condensed milk and water, omitting the carbohydrates but giving the usual supplements of cereals, vegetable and fruit?

Sidney Schwartz, M.D., Ripon, Calif.

ANSWER.—Yes, if cereals are started early enough, followed by the fourth month with vegetables or fruits other than orange juice or ascorbic acid, which in practice are usually started by the third or fourth week of life.

EXTERNAL POPLITEAL PALSY

To the Editor:—Following an operation for repair of cystocele, rectocele and relaxed urethral sphincter under general anesthesia, a paralysis of the left peroneal nerve (lateral popliteal) developed. The patient is a white woman aged 35. There is a complete left foot drop without evidence of returning function as yet—six days following operation. The patient was on the operating room table with the legs in the stirrups for one hour and ten minutes. The stirrups were each padded with a doubled face towel. Might this be a permanent injury? What is the recommended treatment and the prognosis?

Captain, M. C., A. U. S.

ANSWER.—The patient has an external popliteal palsy. Involvement of this nerve usually requires a long time for recovery, although it is not likely to be a permanent injury. The foot, the ankle and the leg should receive heat, massage and stimulation by the galvanic current three times weekly. The foot should be kept at right angles to the leg. In bed a sand bag is usually sufficient for this purpose; when not in bed the foot and leg should be in a cast or splint.